CONSTRUCTION NEWS

PROPOSALS

For proposals Advertised see the pages immediately following the "Construction News" Section.

WATERWORKS

Bids Close			See Eng. News-Record
Dec.	29	Phila., Pa.	Dec. 21
Jan.	2	New Ulm, Minn.	Dec. 28
Jan.	3	Rapid City, S. D.	Dec. 21
Jan.	11	Albemarle, N. C. Adv. Dec. 28	Dec. 21
Jan.	12	Cleveland, O.	Dec. 21
Jan.	15	Cyril, Okla.	Dec. 14
Jan.	22	Hinsdale, Ill.	Dec. 21
Feb.	1	Spokane, Wash.	Nov. 16

SEWERS

Dec.	30	Lakewood (Cleveland P. O.), O.	Dec. 21
Jan.	2	Wilkes Barre, Pa Adv. Dec. 14 to 28.	Dec 14
Jan.	3	Brooklyn, N. Y.	Dec. 28
Jan.	9	Newark, N. J.	Dec. 21
Jan.	15	St. Petersburg, Fla. Adv. Dec. 28.	Dec. 28
Jan.	15	Wash., D. C. Adv. Dec. 28.	Dec. 23
Jan.	16	Richmond, Va. Adv. Dec. 21 and 28.	Dec. 21

WASTE DISPOSAL

Jan.	24	Fargo, N. D.	Dec. 7

BRIDGES

Jan.	9	Ft. Wayne, Ind.	Dec. 28
Jan.	13	Cambridge, Mass. Adv. Dec. 28.	Dec 28
Jan.	23	Spokane, Wash.	Sept. 21
Apr.	1	Wilkes-Barre, Pa.	Dec. 14
Sept.	1, 1923,	Sydney, New South Wales, Australia	Aug. 3

DAMS

Jan.	5	Bluefield, W. Va. Adv. Nov. 30 to Dec. 28.	Nov. 30

RAILWAYS

Jan.	1	Washington	Dec. 7

EXCAVATION, DRAINAGE, IRRIGATION

Dec.	29	Logansport, Ind.	Dec. 21
Dec.	30	Greenfield, Ind.	Dec. 14
Jan.	3	Brooklyn, N. Y.	Dec. 28
Jan.	9	Glencoe, Minn.	Dec. 14

STREETS AND ROADS

Dec.	29	Long Island City, N. Y.	Dec. 21
Dec.	29	Winamac, Ind.	Dec. 21
Dec.	30	Logansport, Ind.	Dec. 21
Dec.	30	Quebec	Nov. 25
Dec.	30	Quebec	Nov. 2
Dec.	30	Quebec	Nov. 9
Dec.	30	Quebec	Nov. 16
Dec.	30	Quebec	Nov. 30
Jan.	2	St. Louis, Mo.	Dec. 7
Jan.	2	Tacoma, Wash.	Dec. 21
Jan.	2	Richmond, Va.	Dec. 23
Jan.	3	Independence, Kan.	Dec. 21
Jan.	4	Rio Vista, Calif.	Dec. 21
Jan.	4	Vincennes, Ind.	Dec. 28
Jan.	4	Marion, Ind.	Dec. 28
Jan.	4	Brooklyn, N. Y.	Dec. 23
Jan.	4	Columbia City, Ind.	Dec. 28
Jan.	5	Washington, Ind.	Dec. 28
Jan.	5	Larned, Kan.	Dec. 7
Jan.	5	Ohio	Dec. 28
Jan.	5	Elizabethtown, Ind.	Dec. 28
Jan.	6	Albion, Ind.	Dec. 28
Jan.	6	Lafayette, Ind.	Dec. 28
Jan.	7	Duluth, Minn.	Sept. 28
Jan.	8	San Diego, Calif.	Dec. 28
Jan.	9	Modesto, Calif.	Dec. 28
Jan.	10	Albemarle, N. C. Adv. Dec. 28	Dec. 21
Jan.	10	San Francisco, Calif.	Dec. 28
Jan.	10	Florida	Dec. 28
Jan.	10	Elkader, Ia.	Dec. 28
Jan.	11	Wichita, Kan.	Dec. 21
Jan.	11	Atlantic City, N. J. Adv. Dec. 28.	Dec. 28
Jan.	11	Louisiana	Dec. 28
Jan.	11	Virginia Adv. Dec. 28.	Dec. 28
Jan.	16	Michigan	Dec. 28
Jan.	23	Spokane, Wash.	Dec. 21
Jan.	24	Faribault, Minn.	Dec. 14
Jan.	25	Ft. Smith, Ark.	Dec. 28
Jan.	30	Quebec	Dec. 28

INDUSTRIAL WORK

Jan.	2	St. Louis, Mo.	Dec. 7
Jan.	4	Delaware, O.	Dec. 14
Jan.	10	Waco, Tex.	Dec. 28
Jan.	15	Great Falls, S. C.	Dec. 28

BUILDINGS

Jan.	2	Olean, N. Y.	Nov. 9
Jan.	2	Duluth, Minn.	Nov. 23
Jan.	2	Lawrence, Kan.	Dec. 14
Jan.	2	Providence, R. I.	Dec. 21
Jan.	2	Rome, Ga.	Dec. 21
Jan.	2	Dover, Del.	Dec. 21
Jan.	3	Cleveland, O.	Dec. 14
Jan.	3	Farmersville, O.	Dec. 21
Jan.	3	Baltimore, Md.	Dec. 28
Jan.	4	Arlington, O.	Dec. 14
Jan.	4	Baker, La.	Dec. 14
Jan.	5	Bath, N. Y.	Dec. 14
Jan.	5	Detroit, Mich.	Dec. 21
Jan.	6	Newark, N. J.	Dec. 21
Jan.	10	Nashville, Tenn.	Dec. 7
Jan.	10	Grand Rapids, Mich.	Dec. 21
Jan.	10	Baltimore, Md.	Dec. 28
Jan.	11	Elizabeth, N. J.	Dec. 14
Jan.	15	Dallas, Tex.	Dec. 21
Jan.	19	Monticello, Ia.	Dec. 21
Feb.	1	Chicago, Ill.	Dec. 21
Mar.	23	Shreveport, La.	Nov. 9

FEDERAL GOVERNMENT WORK

Dec.	30	Power House — Huntington, W. Va. Adv. Dec. 7 to 28.	Dec. 7
Dec.	30	Dredging Pump—Florence, Ala. Adv. Dec. 7 to 28.	Dec. 7
Jan.	3	Piers—Pearl Harbor, H. T.	Nov. 16
Jan.	3	Drainage System—Del Rio, Tex.	Dec. 14
Jan.	3	Alterations—El Paso, Tex.	Dec. 21
Jan.	5	Dredge—Cincinnati, O. Adv. Dec. 7 to 28.	Dec. 7
Jan.	9	Fuel Oil—Wash., D. C.	Dec. 21
Jan.	9	Extension — St. Cloud, Minn.	Dec. 21
Jan.	10	Extension—Elmira, N. Y.	Dec. 21
Jan.	12	Remodeling—Boston, Mass.	Dec. 21
Jan.	15	Metal Work — Key West, Fla. Adv. Dec. 21 and 28.	Dec. 21
Jan.	15	Pipe Line Dredge—Cincinnati, O.	Dec. 14
Jan.	15	Dredging—Virginia	Dec. 28
Jan.	15	Scows—Wilmington, Del. Adv. Dec. 28.	Dec. 28
Jan.	15	Scows—Phila., Pa.	Dec. 28
Jan.	16	Hospital—Tacoma, Wash. Adv. Dec. 14 to 28.	Dec. 14
Jan.	16	Hull—Nashville, Tenn. Adv. Dec. 21 and 28.	Dec. 21
Jan.	17	Dredging—Phila., Pa.	Dec. 28
Jan.	17	Piers—Astoria, Ore.	Dec. 28
Jan.	18	Remodeling—Boston, Mass. Adv. Dec. 28.	Dec. 28.
Jan.	18	Furnishing and Placing Rock —New Orleans, La.	Dec. 21
Jan.	22	Bridges—Alaska	Dec. 28
Jan.	23	Lock Operating Machinery, etc. —Huntington, W. Va. Adv. Dec. 28.	Dec. 28
Jan.	24	Levee Work—St. Louis, Mo. Adv. Dec. 28.	Dec. 28
Jan.	24	Refrigerating and Ice-Making Plant—Pearl Harbor, H. T.	Dec. 14
Feb.	15	Furnishing Stone, etc.—Crescent City, Calif.	Dec. 28

MISCELLANEOUS

Dec.	29	Crane—Phila., Pa.	Dec. 21
Dec.	29	Coal Handling Equipment — Phila., Pa.	Dec. 21
Dec.	29	Motor Trucks—Long Island City, N. Y.	Dec. 21
Dec.	30	Grain Elevator—Port Arthur, Ont.	Dec. 21
Dec.	30	Asphalt, Crushed Stone, Sand, etc.—Phila., Pa.	Dec. 28
Dec.	31	Crushed Stone — Toronto, Ont.	Dec. 21
Jan.	1	Transmission Line—Spokane, Wash.	Nov. 9
Jan.	2	Steel Water Pipe, etc.—Terra Bella, Calif.	Dec. 21
Jan.	2	Road Levee and Bridge—Redwood City, Calif.	Dec. 28
Jan.	3	Portland Cement — Wisconsin	Dec. 28
Jan.	3	Motor Gasoline — New York, N. Y.	Dec. 28
Jan.	8	Rock Crusher and Grader — Minneapolis, Minn.	Dec. 28
Jan.	8	Wharf—Detroit, Mich.	Dec. 28
Jan.	9	Gravel—Louisiana	Dec. 28
Jan.	11	Structural Steel—New Orleans, La.	Dec. 21
Jan.	15	Bulkhead — Jersey City, N. J. Adv. Dec. 21 and 28.	Dec. 21
Jan.	31	Dry Dock Machinery—Esquimalt, B. C	Dec. 21

Where name of official is not given inquiries should be addressed to City Clerk, County Clerk or corresponding official.

Waterworks

PROPOSED WORK

O., Bexley (Columbus P. O.) — See "Streets and Roads."

O., Fairview—Preparing plans 12,000 ft. 6 in. and 21,000 ft. 12 in. c.i. mains, $70,000. Frazier-Ellms-Sheal Co., 2000 B. F. Keith Bldg., Cleveland, engrs. Noted Oct. 19.

Mich., Jackson—Plans new pumping station. $150,000. Engineer not selected.

Ill., Lyons—See "Sewers."

Ind., Bloomington — Having plans prepared new water supply system. $600,000. Pearce, Greeley & Hansen, 39 West Adams St., Chicago, engrs.

Wis., Iron River—Iron River Water & Light Co. plans to rebuild pump house and power plant, brick, rein.-con. and steel, plain foundation, and 2 rein.-con. and steel dams, recently destroyed by flood. $150,000. L. H. Callahan, mgr. Architect not selected.

Wis., Racine—Having plans prepared new waterworks intake, 7,000 ft. 36 in. c.i. pipe, crib and intake well. $280,000. Alvord, Burdick & Howson, 8 South Dearborn St., Chicago, engrs.

Tex., Highland Park—Jan. 16 to vote on $125,000 bond issue for extensive waterworks improvements. M. Costello, city secy.

Okla., Canton — Had plans prepared waterworks system, incl. tank, tower, mains, well and pumping equipment. $53,000. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs. Noted Nov. 2.

Okla., Clinton—Having plans prepared water works and electric light extensions. $45,000. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs.

Okla., Guthrie—Voted $22,000 bonds for extending waterworks and $18,000 bonds for sewers. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs. Noted Nov. 2 under Sewers.

Okla., Nowata—Jan. 23, to vote on $111,000 bonds, new pumps, 2,000,000 gal. reservoir, power plant and mains. Engineer not selected.

Okla., Pauls Valley—Having plans prepared waterworks extensions incl. complete new supply and filter plant. $165,000. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs.

Okla., Poteau—Voted $45,000 bonds for replacing present mains with c.i. pipe and extending present system. J. E. Davis, Poteau, engr.

Okla., Roosevelt—Plans water purification plant, mains, etc. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs.

Okla., Snyder—Having plans prepared waterworks extensions. $15,000. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs.

Okla., Weatherford — See "Industrial Works."

Okla., Wetumka — Had plans prepared water purification plant, mains and pumping equipment. $83,000. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs.

Wash., Usk — W. F. Cochrane plans canals, pumping plant, diversion dam, dike, concrete pipe line. $35,000. R. M. Sandersen, South 321 Lincoln St., Spokane, engr.

Waterworks (Continued)

Ore., The Dalles—Plans prepared for addition to water supply system, incl. 244,000,000 gal. reservoir, with earth and rock fill dam, 88 ft. high, 650 ft. long on top, 8 mi. 16 in. pipe, and new high level reservoir. $375,000. Contract will probably be let next spring. Stevens & Koon, Spalding Bldg., Portland, engrs.

Calif., Palo Alto—Plans election to vote on $110,000 bonds for extensions to water works system. J. F. Byxbee, Jr., city engr.

Ont., Brantford—Having plans prepared waterworks pumping plant. F. Adams, city engr. $30,000. Prices wanted on equipment.

Ont., Galt—City retained James, Proctor & Redfern, engrs., 36 Toronto St., Toronto, to report on waterworks system. It is probable that new mains will be laid and more pumps installed. $50,000.

Ont., Lansing—North York Twp. having plans prepared waterworks system, incl. pumps, pumphouse, c.i. mains, hydrants, valves, reservoir and tank. $125,000. James, Proctor & Redfern, 36 Toronto St., Toronto, engrs.

Ont., Sandwich—See "Streets and Roads."

Ont., Ottawa—Plans water main extensions in Burnham Rd. $2,620, Letchworth Rd. $2,500, Beckwith Rd. $3,230, Glengarry Rd. $2,980, Belgrave Rd. $2,950, Bower St. $4,100, Clegg St. $2,500, Onslow Crescent $4,220, Leonard Ave. $715. A. F. Macallum, city engr.

Ont., Shawville—Takes bids in January building waterworks system. I. D. McCrea, Ottawa (street address not available), engr.

Ont., Scarboro—Scarboro Twp. plans to expend $34,000 on new waterworks area, incl. 8,000 ft. 12 in. c.i. trunk. C. E. Fraser, twp. engr.

B. C., Vancouver—Voted $50,000 by law and soon takes bids for waterworks. C. E. Tisdall, mayor.

BIDS DESIRED

Minn., New Ulm—Jan. 2, by H. Huevelmann, supt. Waterworks Dept., pump equipment for well, 250 g.p.m. pump. F. D. Minium, city engr.

Que., Greenfield Park—Mayor taking bids till end of January for 13,820 ft. watermains in several streets. $34,327. A. Vincent, Longueil, engr.

BIDS RECEIVED

N. Y., Brooklyn—Bd. Water Supply, Municipal Bldg., New York, opened bids Dec. 19, constructing Mt. Prospect conduit a portion of city conduits of Catskill aqueduct from Shaft 24 of city tunnel in Ft Greene Park, along Cumberland St., Lafayette, Washington and Flatbush Aves., to Clarkson Ave., here, from A. Paino, 32 Court St., $995,305 Beaver Eng. & Contg. Co., 51 Chambers St., New York, $995,355; T. A. Gillespie Co., 5 Dey St., New York, $1,013,656. Noted Nov. 30.

CONTRACTS AWARDED

Mich., Detroit—Furnishing and installing 289,000 bronze strainer caps for strainer system of filtration plant, to Michigan Valve & Fdry. Co., 13631 Parkinson St., $30,400. Noted Nov. 16.

Mich., Detroit—Water Bd. will lay 5,800 ft. 6 in. and 1,000 ft. 8 in. c.i. mains in Jane, Robinwood, Josephone, Buena Vista, Meadowbrook, Larkins and Harding Aves., by day labor. $15,000. T. A. Leisen, Water Works Park, engr.

Que., Montreal—R. Bauset, city clk., 46 x 58 x 103 ft. rein.-con., brick and steel distribution control building for new pumping station, Atwater Ave., to E. G. M. Cape & Co., Cathcart St., $167,000. Noted Dec. 14.

Sewers

PROPOSED WORK

O., Bexley (Columbus P. O.)—Preparing plans 8 in. concrete sewer in various alleys. $16,000. Jennings-Lawrence Co., Hartman Bldg., Columbus, engrs.

O., Bexley (Columbus P. O.) — See "Streets and Roads."

Ind., Miller — Plans sewerage system. $300,000. W. P. Cottingham, Gary, engr.

Ill., Lyons—Making plans and takes bids about Jan. 29 for sewer and waterworks project. $130,000. E. Hancock, 2047 Ogden Ave., Chicago, engr.

Ia., Mechanicsville—Takes bids about Feb. 1 for new sanitary sewerage system. Currie Eng. Co., Webster City, engrs. Noted Dec. 21.

WATERWORKS—CLEVELAND, O.

Following are lowest three bids opened Dec. 1, by Dept. of Pub. Utilities, Div. Water, for furnishing and laying Park Lane, Carnegie Ave. and Frank Ave. mains, Baldwin-Fairmount Project, Contr. No. 17, (A) D. Lowensohn, Davis & Farley Bldg. (awarded contract); (B) P. F. Connolly, Commonwealth Bldg.; (C) Stange-Walsh Constr. Co., 2315 Fairmount Rd. The unit bids were as follows:

	A	B	C
12,000 cu.yd. excavation and backfilling	$2.40	$3.24	$3 15
5 M ft. b. m. lumber and wooden sheeting, left in place	30.00	50 00	20 00
2,610 ton furnishing and laying cast iron, straight, bell and spigot pipe	71.00	69 90	70 00
38 ton furnishing and laying cast iron, bell and spigot standard fittings	165.00	150 00	150 00
48 ton furnishing and laying cast iron, bell and spigot special fittings	170.00	150 00	165 00
Setting one 48-in. gate valve furnished by the city	250.00	100 00	200 00
Setting eleven 36-in. gate valves, furnished by the city	200.00	75 00	150 00
Setting two 30-in. gate valves, furnished by the city	150.00	75 00	125 00
Setting one 24-in. gate valves, furnished by the city	125.00	75 00	100 00
Setting one 16-in. gate valve, furnished by the city	100.00	50 00	75 00
40 cu.yd. brick masonry	27.00	30 00	27 00
25 cu.yd. concrete masonry	27.00	20 00	27.00
1,000 lb. steel reinforcement and miscellaneous wrought iron	.07	10	06
100 lin.ft. furnishing and laying 12-in. vitrified pipe drains	3.00	3.50	2 50
200 lin.ft. furnishing and laying 6-in. vitrified pipe drains	1.25	2.00	1 50
Furnishing and setting eight 2-in. brass drains; and setting 2-in. valves and valve boxes, furnished by the City	50.00	50 00	50 00
200 lin.ft. furnishing and laying 2-in. galvanized iron pipe	1.25	1.00	1 00
Extended totals	$234,690	$238,819	$239,460

Kan., Jetmore—See "Streets and Roads."

Kan., Wichita — Resolution passed for storm sewers in Dist. 24. $120,000. P. L. Brockway, city engr.

Tex., Rosenberg—Jan. 10 to vote on $50,000 bond issue for modern sanitary sewerage system. E. E. Sands, Mason Bldg., Houston, consult. engr.

Okla., Guthrie—See "Waterworks."

Colo., Denver—Takes bids about Jan. 10, 26,000 ft. 8-10 in. concrete pipe sewer. $34,000. A. K. Vickery, City Hall, engr. Noted Nov. 23.

Wash., Pullman—Having plans prepared sewerage system. $60,000-$65,000. C. H. and H. S. Green, N517 Lincoln St., Spokane, engrs.

Calif., Palo Alto—Plans election to vote on $50,000 bonds extending sewerage system. J. F. Byxbee, Jr., city engr.

Calif., San Mateo — See "Streets and Roads."

Que., Montreal—Plans 6 mi. of 12 ft. sewer from north end of city to Cartierville. $500,000. E. Fusie, supt. Sewer Dept.

Ont., Gravenhurst — Having plans prepared sewerage system and concrete sewage disposal plant, vitr. tile pipe 8 in. up. $30,000. James, Proctor & Redfern, 36 Toronto St., Toronto, engrs.

Ont., Hamilton—Had plans prepared complete intercepting sewerage system and sewage disposal plant, $2,500,000. First report calls for expenditure of $300,000 for sewage disposal plant, rein.-con. tanks and sedimentation tanks, at west end of city. E. R. Gray, city engr. Gore, Nasmith & Storrie, Confederation Life Bldg., Toronto, consult engrs.

Ont., Sandwich—See "Streets and Roads."

Ont., Toronto—See "Streets & Roads."

BIDS DESIRED

N. Y., Brooklyn—Jan. 3, by E. Riegelmann, boro pres., Boro Hall, sewers in 40th, East 10th, Malta and Bristol Sts., Vanderbilt and Hegeman Aves., Lenox Rd., and Rutherford Pl.

D. C., Wash.—Jan. 15 by Dist. Comrs., 509 Dist. Bldg., for 660 ft. sewer; adv. this issue.

Fla., St. Petersburg—Jan. 15, at office H. T. Davis, dir. of finance, mechanical equipment for sewage screening plant; adv. this issue.

Mich., Lansing — Taking bids storm sewers, incl. 562 ft. 66 in., 4,816 ft. 60 in., 672 ft. 54 in., 391 ft. 48 in., 506 ft. 30 in. and 663 ft. 24 in. rein.-con. or segmental block pipe. $130,000. Private plans.

Calif., San Francisco—T. McDougall (Star Garage), 150 Turk St., receiving bids 2 story, rein.-con. addition to garage. $60,000. J. L. Stewart, Claus Spreckels Bldg., archt. Noted Nov. 23.

CONTRACTS AWARDED

N. Y., Syracuse—Unit price alternate bids for electric driven sewage pumps, received Oct. 10, are given on page 1121. The bids were for motors and equipment of the slip-ring against the brush-shifting type and were compared on the basis of yearly capitalized amortization charges plus annual charges for current.

Pa., Pittsburgh—To T. Cronin Co., South 18th St., sewers in Ravenna and Spohr Sts. $56,320, relief sewers in Wilkins and South Homewood Aves., South Dallas and Reynolds Sts., $61,594.

Mont., Winnett — For 3 mi. trunk and lateral sewer, to Two Miracle Concrete Co., Ford Bldg., Great Falls, $37,000.

Ont., Hamilton—G. C. Coppley, chn. Bd. Control, 2,480 ft. sewer in King and McKittrick Sts., to Hamilton Contg. Co., Home Bank Bldg., $61,770. Noted Nov. 30.

Ont., Toronto—To Murphy Contg. Co., Toronto, (street address not available), sewers in Farnum Ave. $5,760, Balmoral Ave. $7,940, Grenadier Rd. $3,552; to John McKnight Constr. Co., 88 St. Davids St., sewer extension in Dundas St. $2,285; to Natl. Contg. Co., 9 Garnock Ave., sewer in Riverdale Ave. $2,158, Duplex Ave. $5,898; to F. F. Fry Ltd., 43 Scott St., sewer in Blvd. Drive $20,312. Work involves 10,000 ft. 8-12 in. glazed tile sewers.

Ont., Toronto—Furnishing two 2,880,000 gal. centrifugal electric sewage pumps, and one Venturi meter, to John Inglis Co. Ltd., Strachan Ave., $14,171.

Waste Disposal

PROPOSED WORK

Calif., Fresno—Soon takes bids garbage disposal, bids for collection and disposal, separate bids for collection, city to provide for disposal, by either incinerator or sanitary fill method. W. Stranahan, city comr. pub. wks.

BIDS RECEIVED

Pa., Allentown—M. W. Gross, mayor, Room 301 City Hall, opened bids Dec. 18, garbage incinerator, from Davis Garbage Furnace Co., 110 West 40th St., New York City, $20,594; Roberts-Filter Mfg. Co., Darby, $49,500; Universal Destructor Co., Fulton Bldg., Pittsburgh, $70,000. Noted Nov. 23.

CONTRACTS AWARDED

N. Y., Mayfield—Water system, to H. W. Golden & Son, Inc., Troy, $32,629; steel water tank, to Pittsburgh Des Moines Steel Co., Curry Bldg., Pittsburgh, Pa., $11,000. Noted Oct. 12.

Bridges

PROPOSED WORK

N. Y., Binghamton—Plans 3 span concrete arch bridge from Riverside Dr. to Water St. $375,000. W. E. Weller, Municipal Bldg., engr.

Pa., Pittsburgh—Allegheny Co. having plans prepared rein.-con. bridge 750 ft. main span, with 310 ft. concrete approaches and abutments, California Ave. over Jacks Run to connect city with Bellevue. $400,000. V. R. Covell, Court House, engr.

W. Va., Huntington — Huntington Ohio Bridge Co., c/o W. E. Kellegen, Huntington, plans steel toll bridge over Ohio River, 2 or 3 steel trusses, concrete posts, 2,000 ft. span, double deck, concrete flooring. C. A. Turner Co., Jewelers Exch., Minneapolis, Minn., engrs.

O., Akron—Having plans prepared 700 ft. steel deck girder bridge encased in concrete, 60 ft. wide, 36 ft. roadway, 12 ft. walks on each side, on State St., $250,000; plans three through plate steel girder bridges encased in concrete, 88 ft. wide, with 58 ft. roadway and two 15 ft. walks, over Baltimore & Ohio, Pennsylvania, and Erie Rail Roads on Exchange St., $250,000; through plate girder bridge encased in concrete, 38 ft. roadway and two 14 ft. walks over Baltimore & Ohio, Pennsylvania, and Erie Rail Roads on Center St., $175,000; wood trestle as temporary bridge while new Exchange and Center St. bridges are being built, $50,000; plans prepared for rein.-con. trestle, concrete beam and slab top, on West Market St., $180,000. E. A Kemmler, Delaware Bldg., engr.

Bridges (Continued)

Kan., Jetmore—See "Streets and Roads."

Kan., Sedan—Chautauqua Co. had plans prepared 120 ft. steel truss span (Feslers Ford Bridge). C. E. Sperry, Sedan, engr.

Mo., Kansas City—Kansas City Terminal Ry. Co. having plans prepared 1,470 ft. steel and rein.-con. railway and highway bridge; curved bridge $300,000, straight bridge $400,000. J. V. Hanna, ch. engr.

Okla., Pauls Valley—Voted $32,000 bonds for 270 ft. rein.-con. bridge, concrete piers. T. B. Mathews, Durant, engr.

Wash., La Center — State Hy. Comn., Olympia, having plans prepared steel and concrete bridge, viaduct type, about 1,000 ft. long, across east fork of Lewis River on Pacific Highway, south of here. $100,000. J. Allen, state highway engr.

Ontario—See "Streets and Roads."

Ont., Prairie Siding—Kent Co. plans 375 ft. steel lift bridge, about 20 ft. wide, here. $125,000. Kellar & Harrington, Chicago, Ill. (street address not available), engrs.

Ont., Toronto—W. A. Clarke, clk. York Twp., 40 Jarvis St., receiving competitive sketches and plans for 200 ft. rein.-con. arch highway bridge to connect Astley Ave. and Oakdale Crescent. $135,000.

BIDS DESIRED

Mass., Cambridge—Jan. 13, by L. M. Hastings, city engr., furnishing and erecting single leaf movable draw span for 1st St. Bridge over Broad Canal; adv. this issue.

Virginia—See "Streets and Roads."

Florida—See "Streets and Roads."

Ind., Ft. Wayne—Jan. 9, by Auditor Allen Co., steel girder bridge on Coldwater Rd., 111 ft. long, 20 ft. wide. A. W. Grosvenor, Ft. Wayne, engr.

Calif., Redwood City—See "Miscellaneous."

BIDS RECEIVED

North Carolina—State Hy. Dept., Raleigh, constructing rein.-con. bridges and culverts on State Project 201, Carteret Co., from Boney & Hostetler, Williamston, $24,956. Batson-Cook Co., West Point, Ga., $25,396. O. A. Mann & Co., La Grange, Ga., $29,271; constructing 3 rein.-con. bridges on State Project 256, Lenoir Co., from Englehard & Kuelin, Camp Bragg, $52,553. Cornell-Young Co., 4th Natl. Bank Bldg., Macon, Ga., $53,720. Rhyne & Kitchen, Blacksburg, S. C., $57,268; rein.-con. bridge with steel draw span, over Roanoke River at Edwards Ferry, State Project 138 B, Northampton Co., from Pensacola Shipbuilding Co., Amer. Natl. Bank Bldg., Pensacola, Fla., $349,688. Hardaway Constr. Co., 909 Elizabeth Ave., Charlotte, $350,679. Atlantic Bridge Co., Roanoke, Va., $356,102. Noted Nov. 30, under Streets and Roads.

Ohio—See "Streets and Roads."

Kan., Columbus—Cherokee Co., 2 rainbow arch bridges, one 80 ft. other 130 ft., concrete abutments, near Baxter Springs, from Harrison Eng. Corps, Wichita (street address not available) $35,414; Maxwell Constr. Co., Columbus, $37,855; Koss Constr. Co., 2818 5th St., Des Moines, Ia., $41,569. Noted Dec. 7.

S. D., Yankton—Meridian Hy. Bridge Co., opened bids Dec. 11, steel superstructure for double deck bridge 5,820 ft., incl. approaches, 1,680 ft. span length over Missouri River, from Amer. Bridge Co., 208 South LaSalle St., Chicago, $362,570; Mt. Vernon Bridge Co., Mt. Vernon, O., $366,370; Bethlehem Steel Co., Bethlehem, $381,350. Noted Nov. 30.

Missouri—State Hy. Dept., Jefferson City, opened bids Dec. 2, (1) one 20 ft. rein.-con. slab span, 20 ft. roadway, concrete abutments, over Meeks Branch on road from Neosho to Arkansas State line, State Project Route 1, Sect. 106, Newton Co. (2) three 30 ft. rein.-con. deck girder spans, 20 ft. roadway, concrete abutments and piers over Cedar Creek on road from Neosho to Joplin, State Project Route 1, Sect. 104, Newton Co. (3) one 55 ft. steel truss, one 35 ft. and one 45 ft. I-Beam spans, 20 ft. roadways, concrete abutments, on road from Malden to Risco, State Project Route 82, Sect. 3, New Madrid Co. (4) one 160 ft., one 80 ft. and one 60 ft. steel truss spans, concrete substructure, 20 ft. roadway, over north fork of White River on road from Gainesville to West Plaines, Federal Aid Project 111, Sect. C, Ozark Co. (5) ten 20 ft. I-Beam spans, 20 ft. roadway, cresoted wood pile bent substructure, over overflow of Crooked River on Sta. 364 plus 95 on road from Richmond to Carrollton, State Project 10, Sect. 13, Ray Co. (6) two 160 ft. and one 80 ft. steel truss spans, 20 ft. roadway and four 40 ft. rein.-con. deck girder spans, concrete substructure, over Big Piney River, on Sta. 5 plus 135 on road from Springfield to St. Louis, State Project Route 14, Sect. 45, Pulaski Co. (7) two 20 ft. rein.-con. slab spans, 20 ft. roadway, 2 rein.-con. abutments, 1 concrete pier, on Sta. 7 plus 29 on road from Springfield to St. Louis, State Project Route 14, Sect. 76, St. Louis Co., (8) one 14 ft. rein. con. slab, one 80 ft., one 60 ft. and two 50 ft. steel truss spans, 20 ft. roadways, concrete substructures, on road from St. Louis to Kansas City, State Project Route 2, Sect. 71, St. Charles Co. (9) three 60 ft. steel truss and two 20 ft. rein.-con. slab spans, 20 ft. roadway, concrete substructure on Sta. 440 plus 00 on road from Centerville, to Ellington, State Project Route 21, Sect. 25, Reynolds Co. (10) one 20 ft. rein.-con. slab span, 20 ft. roadway, etc. on Sta. 26 plus 30, on road from Memphis to Edina, State Project Route 15 Sect. 4, Scotland Co. (11) one 16 ft. rein.-con. slab span, 20 ft. roadway, etc, over branch of Brush Creek, on Sta. 119 plus 83, on road from Jefferson City to Eldon, State Project Route 15, Sect. 56, Miller Co. (12) two 60 ft. steel truss spans, 18 ft. roadway, concrete piers and abutments, over Wild Cat Creek, on Sta. 22 plus 01.3 on road from Princeton to Trenton, State Project Route 3 Sect. 6, Mercer Co. (13) one 80 ft., one 60 ft. and one 50 ft. steel truss, eight 20 ft. rein.-con. slab and one 30 ft. rein.-con. deck girder spans, 20 ft. roadway, on road from Chillicothe to Trenton, State Project Route 3, Sect. 16, Livingston Co. (14) one 30 ft. rein.-con. deck girder span, 20 ft. roadway, concrete abutments, on Sta. 273 plus 55, on road from Jefferson City to Eldon, State Project Route 15, Sect. 56, Miller Co. (15) one 40 ft. I-Beam span, 20 ft. roadway, rein.-con. abutments on Sta. 647 plus 80 on road from Charleston to New Madrid, State Project Route 55 A, Sect. 2, Mississippi Co. (16) one 50 ft. one 100 ft. and one 120 ft. steel truss spans, 20 ft. roadway, rein.-con. abutments, etc. on road from Kansas City to St. Louis, State Project Route 2, Sect. 7, Lafayette Co. (17) two 160 ft., one 120 ft. and one 80 ft. steel truss and five 20 ft. rein.-con. slab spans, 20 ft. roadway, etc. on road from Kansas City to Springfield, State Project Route 14, Sect. 38, Laclede Co. (18) one 20 ft. rein.-con. slab span, 20 ft. roadway, concrete abutments, on Sta. 111 plus 39 on road from Lone Jack to Warrensburg, State Project Route 12 Sect. 5, Johnson Co. (19) one 25 ft. rein.-con. deck girder span, 20 ft. roadway, rein.-con. abutments, over Skunk Creek, on Sta. 206 plus 60, on road from Warrensburg to Clinton, State Project Route 13, Sect. 26, Johnson Co. (20) one 30 ft. and one 40 ft. rein.-con. deck girder spans, 20 ft. roadways, 4 rein.-con. abutments, on road from Warrensburg to Clinton, State Project Route 13, Sect. 27, Johnson Co. (21) one 25 ft. rein.-con. deck girder and three 50 ft. steel truss spans, 20 ft. roadways, etc., on road from St. Louis to Kansas City State Project Route 2, Sect. 6, Jackson Co. (22) two 20 ft. rein.-con. slab, one 60 ft., one 100 ft. and two 50 ft. steel truss spans, 20 ft. roadways, concrete piers and abutments, on road from St. Louis to Kansas City, State Project 2, Sect. 4, Jackson Co. (23) one 80 ft. steel truss and two rein.-con. slab spans, 20 ft. roadway, concrete abutments and piers, over middle fork of Tebo Creek, on Sta. 31 plus 60 on road from Windsor to Clinton, State Project Route 24 Sect. 4, Henry Co. (24) one 20 ft. and two 60 ft. steel truss spans, 20 ft. roadways, rein.-con. abutments and piers, over Big Creek on Sta. 23 plus 80, on road from Bethany westward, State Project Route 4, Sect. 34, Harrison Co. (25) one 80 ft. steel truss and two 20 ft. rein.-con. slab spans, 20 ft. roadway, concrete piers and abutments, over dry fork of Merramec River, on Sta. 349 plus 59 on road from Salem to Licking, State Project Route 32, Sect. 4, Dent Co. (26) one 40 ft. rein.-con. deck girder and one 50 ft. steel truss spans, 20 ft. roadways, concrete abutments, over Spring Creek on road from St. Louis to Springfield, State Project Route 14, Sect. 66, Franklin Co. (27) one 30 ft. rein.-con. deck girder and two 20 ft. rein.-con. slab spans, 20 ft. roadway, concrete piers and abutments, over Linley Creek, on Sta. 827 plus 70 on road from Bolivar to Buffalo, State Project Route 15, Sect. 80, Dallas Co. (28) one 40 ft. rein.-con. deck girder and one 20 ft. rein.-con. slab spans, 20 ft. roadway, etc., on road from Jefferson City to Tuscumbia, State Project Route 15 Sect. 52, Cole Co. (29) one 30 ft. rein.-con. deck girder, one 50 ft. and one 60 ft. steel truss spans, 20 ft. roadways, concrete abutments, on road from Jackson to Perry Co. line, State Project Route 25 Sect. 19, Cape Girardeau Co., from J. P. Wolfenbarger, Neosho, (1) $6,283; Wimstead & Gonter, Siloam Springs, Ark. (1) $6,440; Allhands & Davis, 705-6 Frisco Bldg., Joplin, (1) $6,458 (2) $9,936 (27) $9,152; Independent Constr. Co., Pittsburg, Kan. (2) $9,068; Koss Constr. Co., 2818 5th Ave., Des Moines, Ia., (2) $9,890 (21) $21,992 (22) $36,511; A. Creek, Gideon, (3) $12,909; Novaculite Constr. Co., Marion, Ill., (3) $12,363 (15) $4,832; Pioneer Constr. Co., 101 New York Life Bldg., Kansas City, (4) $46,476 (17) $77,724; Parham Constr. Co., East St. Louis, Ill. (4) $61,026 (6) $62,384; Natl. Constr. Co., Inc., Kansas City (street address not available) (5) 90,318; Cook & O'Brien Constr. Co., 305 Ry. Exch. Bldg., Kansas City, (5) $8,018; A. Hood, Independence, (5) $8,070; M. E. Gillioz, Monett, (6) $62,718; Kansas City Bridge Co., 510 Orear-Leslie Bldg., Kansas City, (6) $62,962; Moreno-Burkham Constr. Co., 1213 Syndicate Trust Bldg., St. Louis, (7) $8,162 (8) $45,757; Louis Rich Constr. Co., East St. Louis, Ill., (7) $6,684; S. M. Timberlake Co., 236 Amer. Central Life Bldg., Indianapolis, Ind., (7) $6,622 (8) $39,148; Alzina Constr. Co., Unity Bldg., Springfield, Ill. (8) $39,905 (22) $40,102; E. A. Luck, Black Rock, Ark., (9) $32,375; Coopers Constr. Serv. Co., Federal Reserve Bank Bldg., St. Louis (9) $23,406; Muskogee Contg. Co., Muskogee, Okla. (9) $25,169; W. H. and G. H. Turner, Memphis, (10) $5,842; F. F. O'Dell, Farmington, (10) $6,404; Fogleman & Thompson, Eugene, (11) $2,559 (14) $4,034; Massman-Scott Constr. Co., 3663 Madison Ave., Kansas City, (11) $2,662 (14) $4,163; Doehla-Kolkmeyer, Jefferson City, (11) $2,719 (28) $12,828; Pittsburg-Des Moines Steel Co., Tuttle and Southwest 10th Sts., Des Moines, Ia., (12) $12,972 (13) $57,296; Monarch Eng. Co., Falls City, Neb., (12) $13,822; Illinois Steel Bridge Co., 608 Laclede Gas Bldg., St. Louis, (13) $53,207 (25) $16,185; Campbell Bros., Kansas City (street address not available), (13) $55,539; J. W. Newton, Eldon, (14) $4,528; R. F. Williams, Wyatt, (15) $5,301; Keeley Bros. Constr. Co., 2100 State St., East St. Louis, Ill., (15) $4,829; Spitcaufsky Bros., 2452 Benton Blvd., Kansas City, (16) $44,239; F. E. Marsh & Co., Des Moines, Ia. (street address not available), (16) $47,199; J. O. Patterson, 310 Ridge Bldg., Kansas City (16) $48,674; Wausau Iron Wks., Wausau, Ia., (17) $78,390; General Constr. Co., Syndicate Trust Bldg., St. Louis, (17) $78,499 (25) $16,176; J. E. Ridge, Warrensburg, (18) $7,174; A. T. Cook, Ottawa, Kan., (18) $7,196 (19) $7,278 (20) $12,377; J. W. Wilson, Warrensburg, (18) $7,677; G. A. Woods Constr. Co., Smithville, (19) $8,184 (20) $16,123; C. T. Johnson, Warrensburg, (19) $8,207; Maxwell Constr. Co., Columbus, Kan., (20) $15,053; Harrison Eng. & Constr. Co., Wichita, Kan., (street address not available) (21) $22,075 (22) $37,215; J. J. Dunnegan, Shenandoah, Ia., (21) $24,855; Harrison Constr. Co., Des Moines, Ia. (street address not available), (23) $16,013; A. M. Highnote, Columbus, Kan., (23) $16,734; Carterville Constr. Co., Carterville, (23) $16,901; Rand Constr. Co., 1007 New York Life Bldg., Kansas City (24) $27,547; C. T. Fogle Constr. Co., Jefferson City, (25) $16,241; Frazier Davis Constr. Co., Arcade Bldg., St. Louis, (26) $14,802; Felix Kersting Co., Jefferson City, (26) $15,611 (28) $12,094; C. F. Johnson & Son, Buffalo, (27) $8,886; J. E. Hartley, Mt. Vernon, (27) $9,386; Carroll, Bedwell & Hartell, Cape Girardeau, (29) $14,536.

Colorado—State Hy. Dept., Denver, steel and timber bridges at Huffman Crossing of Sand Creek about 5 mi. east of Colorado Springs on State Highway 30, El Paso Co., from J. R. Donaghy, 416 North Nevada Ave., Colorado Springs, $23,747 Colorado Bridge & Constr. Co., Gas & Electric Bldg., Denver, $23,945; W. O. Morrison, 409 Cooper Bldg., Denver, $26,016. Engrs. est. $26,399.

Calif., Redwood City — San Mateo Co., constructing rein.-con. arch and slab culvert over San Mateo Creek, between B and Griffith Aves., 3,000 cu.yd. excav, 1,400 cu. yd. Class A rein.-con. for arch, 135 cu.yd. Class A rein.-con. for walls, 105 cu.yd. Class A concrete for slabs, etc., 650 sq.ft. cement surfacing, etc., from C. J. Lindgren, El Cerrito Ave., Burlingame, $41,568; Union Constr. Co., Balfour Bldg., San Francisco, $44,022; H. G. Vansano, 58 Sutter St., San Francisco, $44,640.

CONTRACTS AWARDED

Alabama—State Hy. Dept., Montgomery, 566 ft. concrete girder bridges with one 80 ft. steel span, on Opelika-Waverly Rd., Lee Co., to Stanley & Singer Constr. Co., Lafayette, $37,221; 1,017 ft. concrete bridges, slab girder type, on Montgomery-Birmingham Highway, from Jefferson Co. line to Chilton Co. line, Sects. A and B, Federal Aid Project 99, Shelby Co., to J. W. Gwin, Jefferson

Bridges (Continued)

Co. Bank Bldg., Birmingham, $80,447. Noted Dec. 14 and 21.

S. D., Forestburg — State Hy. Comn., Pierre, 408 ft. rein.-con. bridge over James River, here, incl. 515.3 cu.yd. concrete, 43,750 lb. reinforcing and 209,081 lb. structural steel, to Pioneer Bridge Co., Mitchell, $24,216.

Ia., Mt. Ayr—Ringgold Co., furnishing material and constructing 54 culverts and extensions, 1 I beam and 1 pony truss bridge, to C. J. Kramme & Co., Ft. Dodge, $41,973. Noted Nov. 30.

Wash., Spokane—Spokane Co., concrete bridge consisting of one 150 ft. and two 80 ft. spandrel arches, with 56 ft. concrete girder approaches at each end, 24 ft. clear roadway, over Spokane River on Trent Rd., to W. J. Doust, Lindelle Bldg., $60,370. Engrs. est. $70,000. Noted Nov. 30.

Dams

PROPOSED WORK

Ind., Ft. Wayne—Having plans prepared and takes bids in about 60 to 90 days, 550 ft. dam across Maumee River near Walton Ave. Bridge, rein.-con. permanent spillway, 2 steel movable rollers, each approximately 100 ft. long, 10 ft. diam., hoisting machinery and adjustable gates. Engineers desire to get in touch with manufacturers who can figure on steel rollers, also manufacturers who can build heavy hoisting machinery for same. F. Randall, city engr. C. Brossman, 1503 Merchants Bank Bldg., Indianapolis, consult. engr. A. W. Grosvenor, 710 Packard St., civil engr. This corrects report in Dec. 14 issue.

Wis., Iron River—See "Waterworks."

Kan., Jetmore—See "Streets and Roads."

Tex., Ballinger—See "Streets and Roads."

Que., Montreal—Back River Power Co., c/o J. R. Walker, 35 Common St., had plans prepared dam across Riviere des Prairies just below Visitation Island, to develop 50,000 hp. $2,000,000. T. Pringle & Son, 20 St. Nicholas St., engrs.

Railways

PROPOSED WORK

Florida—Florida Citrus Highlands Ry., Stovall-Nelson Bldg., Tampa, plans 4½ mi. tracks and spurs from Bareah to Frostproof, and station at Frostproof. $25,000. Engineers of Seaboard Airline Ry., Wilmington, N. C., will supervise construction.

Wisconsin—Madison Rys. Co., 2302 Fair Oakes Ave., Madison, plans railroad from Madison to Sturgeon Bay, through Sun Prairie, Oakfield, Fond du Lac Kiel and Manitowoc. $2,600,000. D. Montgomery, mgr.

Ontario—Toronto Transportation Comn., Ryrie Bldg., Toronto, plans to extend Parliament St. car tracks from Prospect to Bloor Sts., Toronto, 1,800 ft. double track, 100 lb. rails on 12 in. concrete with granite pavement between tracks. $150,000. H. H. Couzens, Ryrie Bldg., Toronto, mgr.

Excavation, Drainage, Irrigation

PROPOSED WORK

Tex., Ballinger—Colorado Irrigation Dist., Runnels Co., plans to vote on $1,000,000 bonds to irrigate 100,000 acres, work includes dam, etc. A. N. Norris, member of State Bd. Water Engrs., Austin, engr.

Nev., Lovelocks — Pershing Co. election Jan. 20 to vote on $40,000 bonds for drainage work in lower Humboldt Valley.

Ariz., Maricopa—Maricopa Irrigation Dist. rejected bids opened Nov. 27, furnishing material and labor, and construction of necessary machinery and installation of general irrigation system. Will revise plans and readvertise. Reed & Baker, 419 Fleming Bldg., Phoenix, engrs. Noted Nov. 16.

Ont., Barrie—Simcoe Co. and Provincial Government, Toronto, having plans prepared dredging Nottawasaga River, reclaiming 20,000 acres land. $200,000. G. A. McCubbin, 135 King St., Chatham, engr.

Ore., Mollala—Mollala Municipal Impvt. Dist. incl. city and 4,000 acres surrounding same, has been organized to drain and irrigate said tract. $100,000 to $125,000. L. A. Shaver, O. W. Robbins and S. A. Knapp, Mollala, dir. Engineer not selected.

BIDS DESIRED

N. Y., Brooklyn—Jan. 3 (change of date) by E. Riegelmann, boro pres., Boro Hall, dredging Fresh Creek from head of Fresh Creek Basin to Channel of Jamaica Bay. Noted Dec. 7.

Tex., Houston—Harris Co. D. D. No. 1, Alief, taking bids ditches, etc., here. $75,000. Howe & Wise, 1st Natl. Bank Bldg., co. engrs.

CONTRACTS AWARDED

Mont., Luther — Red Lodge — Rosebud Irrigation Dist., J. A. Fiveland, dir., 300,000 cu.yd. excav., 2,000 cu.yd. rein.-con., 15,000 lb. structural steel, 2,500 sq.yd. paving, 2,000 ft. corrugated metal pipe, 700 ft. vitr. pipe, 3,600 ft. flume, etc., to W. C. McCloud, Livingston $219,800.

Calif., Merced—Merced Irrigation Dist., drilling and lining 30 wells, 110 ft. each, to J. B. Rogers, 110 Sutter St., San Francisco, boring 16 in. wells $2.75 per lin.ft., 18 in. wells $3, 20 in. wells $3.25; casing 16 in. wells $2.82, 18 in. wells $4, 20 in. wells $4.41. Noted Nov. 30.

Streets and Roads

PROPOSED WORK

N. Y., Bath—Steuben Co. plans $200,000 bond issue for new highway.

N. Y., Elmira—Chemung Co. plans to construct highways. $26,250. Engineer not announced.

N. Y., Westfield—Chautauqua Co. plans paving 2 mi. Westfield-Barcelona Rd., 16 ft., concrete. $25,000. S. E. Fitch, co. engr.

Pa., Pittsburgh — Plans widening Cherry Alley from 6th to Liberty Aves., will include wrecking buildings on southern side of street. $1,000,000. F. W. Lyon, City County Bldg., engr.

Pa., Sewickley—Plans repaving 1 mi. Lincoln Highway, brick on old base, 30 ft. $50,000. J. C. Hiteshow, Municipal Bldg., engr.

Pa., Waynesburg — Greene Co. plans $200,000 bond issue for new roads.

Florida — State Hy. Dept., Tallahassee, takes bids about Jan. 15, surfacing 10 mi. road from Frostproof to Avon Park, Highlands Co., 2½ in. bituminous macadam on 8 in. crushed rock. J. S. Boggs, state highway engr.

Fla., De Land—Volusia Co. plans election to vote on $30,000 bonds paving 4 mi. road from Allanhurst to Brevard Co. and Canal Ave. near New Smyrna, 15 ft., 7 in. coquina or other rock, tarvia or asphalt and sand surface. R. J. Bisnop, chn.

Kentucky — State Hy. Dept., Frankfort, having plans prepared grading 9.717 mi. road from Rowan Co. line to Olive Hill, 24 and 28 ft., Federal Aid Project 68, Carter Co. J. S. Boggs, state highway engr.

O., Akron—Plans to issue $315,000 bonds resurfacing, repairing and improving various streets. Total amount of money to be spent for highway improvement in city of Akron in 1923 will amount to at least $1,500,000. E. A. Kemmler, Delaware Bldg., engr.

O., Bexley (Columbus P. O.)—Preparing plans grading, curbing, laying 8 in. water mains, making necessary sewer connections and paving 2,200 ft. Ardmore Rd. from Broad St. to north line of Ardmore addition, 24 ft., $45,000, 2,200 ft. Cassingham Rd. from Broad St. to north line of Ardmore addition, 24 ft., $45,000, 2,200 ft. Remington Rd. from Broad St. to north line of Ardmore addition, 24 ft., $45,000, 2,000 ft. Fair Ave. from Cassidy Ave. east, 36 ft., roadway with 18 ft. parkway between 2 sides, $60,000, all brick, concrete, asphalt or tarvia. Jennings-Lawrence Co., Hartman Bldg., Columbus, engrs.

O., Dayton—Montgomery Co. plans paving 1 mi. Gettysburg Ave. from Jalappa Rd. to Eaton Pike, 20 ft., 11,700 sq.yd. asphalt or concrete. $30,000. W. O. Pease, Dayton, co. surv.

Ind., Evansville — Vanderburgh Co. rejected bids grading and graveling 15,400 ft. E. I. Smith Rd., 16 ft. $26,947. Will readvertise. Noted Dec. 7.

Mich., Detroit — Plans prepared grading and paving 16 alleys, 20,480 sq.yd. one course 6 in. concrete, with 2 x 6 in. retaining plank. $51,200. J. W. Reid, city engr.

Mich., Jackson—Election in spring to vote on $200,000 bonds sheet asphalt pavements on 6 in. concrete, on 8 main streets. P. Arnold, city engr.

Ill., Elmhurst—Making plans and takes bids about Jan. 19, concrete sidewalks. $25,000. E. Hancock, 2047 Ogden Ave., Chicago, engr.

Ill., Posen (Harvey P. O.)—Making plans and takes bids about Feb. 6, concrete sidewalks. $80,000. E. Hancock, 2047 Ogden Ave., Chicago, engr.

Ill., Villa Park—Making plans and takes bids about Jan. 15 concrete paving [illegible] streets. $40,000. E. Hancock, 2047 Ogden Ave., Chicago, engr. Noted Mar. [illegible]

Wisconsin—Following is outline of proposed concrete road construction program (subject to bond issue) in Div. 2, [illegible] ring 1923, comprising following counties:

Fond du Lac Co., 5 mi. State Trunk Highway 56, 10.5 mi. State Trunk Highway 55, 5 mi. State Trunk Highway [illegible] 6.5 mi. State Trunk Highway 23, 5.5 mi. State Trunk Highway 91, 3.5 mi. State Trunk Highway 49. G. Treleven, Fond du Lac, comr.

Kenosha Co., 1.75 mi. State Trunk Highway 116, widening 2 mi. of 9 ft. pavement on State Trunk Highway 50. J. F. Herzog, Kenosha, comr.

Milwaukee Co., 10 mi. road, location not as yet determined. W. F. Cavanaugh, Milwaukee, comr.

Ozaukee Co. 3 mi. State Trunk Highway 17, 5 mi. State Trunk Highway 57. W. J. Ubbink, Port Washington, comr.

Racine Co., 1 mi. State Trunk Highway 36, 1.25 mi. State Trunk Highway 36, 4 mi. River Rd., 4.2 mi. County Trunk Highway C, 2 mi. Browns Lake Rd. W. A. Bechthold, Racine, comr.

Sheboygan Co., 0.25 mi. Main St., Village of Elkhart Lake, 0.25 mi. Main St., Village of Random Lake. G. W. Ubbelohoe, Sheboygan, comr.

Walworth Co., 5 mi. State Trunk Highway 20, 4.5 mi. State Trunk Highway 12, 9 mi. State Trunk Highway 12, 1.5 mi. County Trunk Highway H, 1.5 mi. County Trunk Highway C. H. J. Peters, Elkhorn, comr.

Washington Co., 2.5 mi. State Trunk Highway 29, 0.5 mi. State Trunk Highway 68, 1.75 mi. State Trunk Highway 68, West Bend east, 2.75 mi. State Trunk Highway 55, 1.6 mi. State Trunk Highway 15, 3 mi. Sheboygan Rd. 2 mi. Richfield Spur, 3.5 mi. Milwaukee-Germantown Rd., 2.5 mi. Jackson-Cedarburg Rd., 3 mi. Hartford-Thompson-Hartford Rd.

Waukesha Co., 5.5 mi. State Trunk Highway 67, 2.5 mi. State Trunk Highway 83, 6.5 mi. State Trunk Highway 74, 4.5 mi. Merton-North Lake Rd. 3.5 mi. Waukesha-Prospect Rd., 2 mi. State Trunk Highway 41, Wales relocation. C. J. Hahn, Waukesha, comr.

Wisconsin—Following are county appropriations for state and county aid road and bridge construction during 1923. Polk Co. $108,735, C. W. Nystrom, Balsam Lake, comr.; Florence Co. $36,534, O. F. Soderberg, Florence, comr.; Marinette Co. $167,849, A. Eklund, Pestigo, comr.; Shawano Co. $209,861, W. F. Meyer, Shawano, comr.; Ozaukee Co. $368,041, W. J. Ubbink, Port Washington, comr.; Chippewa Co. $113,136, P. O. Lokrantz, Chippewa Falls, comr.

Ia., Dyersville—Takes bids about Feb. 1 for 52 blocks brick paving. N. B. Barber, Waterloo, engr. Noted Dec. 21.

Minn., Slayton—Murray Co. having plans prepared grading 10 mi. State Rd. 6 from Curry to Cottonwood County line, $10,000; 13.5 mi. State Rd. 11, from Dovray to Walnut Grove, $18,000; 9 mi. State Rd. 4, from Avoca to Cottonwood County line, $10,000; 6 mi. State Rd. 10, from Fulda to Wirock, $7,500. J. A. Myron, Slayton, engr.

Minn., Thief River Falls—Pennington Co. plans grading 6 mi. State Rd. 5, from here east.

Kan., Emporia — Comrs. Lyon Co. soon take bids concrete paving 1.9 mi. Olpe Rd., 18 ft. $100,000. W. S. Ruggles, co. engr.

Kan., Girard—Comrs. Crawford Co. soon take concrete paving 2 mi. Walnut Englevale Rd., 18 ft., $70,000; 4.937 mi. Radley Ringo Rd., 18 ft., $125,000. C. M. Cooper, Girard, engr.

Kan., Girard—Crawford Co. rejected bids received Dec. 11, concrete paving 0.942 mi. Arcadia Branch to Commercial Highway, 18 ft. $32,182. C. M. Cooper, co. engr.

Kan., Jetmore—Making plans paving, sewers, bridge and dam. A. T. Archer & Co., 609 New England Bldg., Kansas City, Mo., engrs.

Kan., Wichita — Comrs. Sedgwick Co. soon take bids paving 0.8 mi. Tyler Rd., 9 ft., concrete or brick. $25,000. M. Roseberry, co. engr.

South Dakota—State Hy. Comn., Pierre, takes bids in January, grading 5.66 mi. road in Todd Co. $40,203. F. D. Hudgins, state engr.

S. D., Sioux Falls—Plans paving 12,730 sq.yd. 6th St. from Weber to Van Eps Aves., $34,000; 4,745 sq.yd. Weber Ave. from 6th to 8th Sts., $13,040. S. B. Howe, city engr.

Streets and Roads (Continued)

North Dakota — State Highway Comn., Bismarck, plans grading and graveling 17.8 mi. in northeast section of state. $700,000. H. C. Frahm, Minot, div. engr.

Missouri—State Hy. Dept., Jefferson City, opened bids Dec. 2 improving (1) road from Centerville southward, State Project Route 21, Sect. 25, Reynolds Co. (2) road from Gainesville eastward, State and Federal Aid Project 111 C, Ozark Co. (3) road from Kansas City to St. Louis, State Project Route 20, Sect. 10, Lafayette Co. (4) road from Warrensburg to Clinton, State Project Route 13, Sect. 26, Johnson Co. (5) road from Festus to St. Genevieve Co. line, State Project Route 29, Sect. 2, Jefferson Co. (6) road from Opolis to Asbury, State Project Route 57, Sect. 2, Jasper Co. (7) road from Kansas City to St. Louis, State Project Route 2, Sect. 6, Jackson Co. (8) road from Kansas City to St. Louis, State Project Route 2, Sect. 5, Jackson Co. (9) road from Bethany, westward, State Project Route 4, Sect. 24, Harrison Co. (10) road from Ava southeastwardly, State Project Route 5, Sect. 94, Douglas Co. (11) road from Ava southeastwardly, State Project Route 5, Sect. 93, Douglas Co. (12) road from Memphis to Edina, State Project Route 15, Sect. 4, Scotland Co., from E. A. Luck, Black Rock, Ark., (1) $64,999 (10) $12,389 (11) $13,836; Coopers Constr. Service Co., Federal Reserve Bank Bldg., St. Louis, (1) $53,162; Muskogee Contg. Co., Muskogee, Okla. (1) $54,922; Pioneer Constr. Co., 101 New York Life Bldg., Kansas City, (2) $56,693; Parham Constr. Co., East St. Louis, Ill. (street address not available) (2) $74,115; Cook & O'Brien Constr. Co., 305 Ry. Exch. Bldg., Kansas City (3) $112,535 (7) $201,839 and $222,931 (8) $159,998; C. T. Johnson, Warrensburg (3) $112,816 (4) $35,974; J. O. Patterson & Co., 310 Ridge Bldg., Kansas City, (3) $116,700 (7) $224,273; G. A. Woods Constr. Co., Smithville, (4) $35,863; A. T. Cook, Ottawa, Kan. (4) $33,721; W. J. Knorpp and J. Richardson, De Soto, (5) $28,902; J. P. Sparks, Kirkwood, (5) $31,410; M. E. Gillioz, Monett, (5) $36,332; V. E. Koch, Box 604, Joplin, (6) $76,200; Carterville Constr. Co., Carterville, (6) $78,336; Du Bois & Co., 126 East 1st St., Wichita, Kan., (6) $80,385; Harrison Eng. & Constr. Co., Wichita, Kan. (street address not available) (8) $163,544; J. J. Dunnegan, Shenandoah, Ia., (8) $166,429; Rand Constr. Co., 1001 New York Life Bldg., Kansas City, (9) $142,392; Summerfield, Jones & Co., Springfield (street address not available), (10) $11,795 (11) $13,247; W. H. and G. H. Turner, Memphis, (12) $54,616; F. F. O'Dell, Farmington, (12) $54,148. Noted Nov. 23.

Tex., Ballinger—Runnels Co. plans to construct State Highway 7 A, from here to county line. $40,000. State Highway Comn., Austin, granted $20,000 aid not to exceed 50 per cent of cost of project. U. Stephens, co. engr.

Tex., Bay City — Matagorda Co. voted $110,000 bond issue Nov. 18 for highway improvement. J. C. Carrington, co. engr.

Tex., Center—Shebly Co. making plans grading and gravel surfacing 12.5 mi. State Highway 35 from Bobo to west line of Joaquin Rd. Dist. 5, 16 ft. $160,000. T. H. Dillon, co. engr.

Tex., Columbus — Fayette Co. election Jan. 27 to vote on $100,000 bonds for grading, raising, filling and gravel topping 15 mi. roads in Dist. 3, 18 ft. $100,000.

Tex., Conroe—Attorney Generals Dept., Austin, approved $40,000 bond issue for road and highway improvement in Montgomery Co. W. H. Lee, co judge.

Tex., Conroe—Montgomery Co. plans to construct State Highway 19. $150,000. State Highway Comn., Austin, granted $70,000 aid, not to exceed 50 per cent of cost. W. H. Lee, co. judge.

Tex., Dallas—See "Miscellaneous" under Park Improvements.

Tex., Highland Park—Jan. 16, to vote on $100,000 bonds for street paving and improvements. M. Costella, city secy.

Tex., Jefferson—State Hy. Comn., Austin, alloted $75,338 aid to Marion Co. for construction of 14.42 mi. State Highway 35, on condition that county surface State Highway 8 with bituminous topping, present plans calling for gravel road. T. B. Warden, co. engr.

Okla., Chandler—Had plans prepared for brick paving 13 blocks. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs. Noted Nov. 16.

Okla., Sayre—Plans paving 13 blocks in residence district, 18,000 sq.yd. concrete.

ROAD WORK—FLORIDA

Following are lowest three bids opened Nov. 14, by State Rd. Dept., Tallahassee, for constructing road between Pensacola and Roberts, Project No. 34, Escambia Co., (A) C. H. Turner Co., Pensacola; (B) S. S. Fulghum, Pensacola; (C) W. D. Winchell & Co., Columbus, Ohio. The unit bids were as follows:

	A	B	C
100 acres clearing and grubbing	$35.00	$55.83	$60.00
59,154 cu.yd. regular excavation	.37	.43	.52
105,600 sq.yd. plain cement concrete	2.08	2.25½	2.36
17,785 lb. reinforcing steel	.09	.046	.07
8,100 lin.ft. corrugated metal pipe, 15 in.	2.02	2.21	1.60
600 lin.ft. corrugated metal pipe, 24 in.	3.05	3.54	3.00
213.3 cu.yd. class "A" concrete	25.80	16.40	18.00
Extended totals	$250,808	$270,265	$287,136

ROAD WORK—COLORADO

Following are lowest three bids opened by State Highway Comn., Denver, for constructing Federal-Aid Project No. 116-A, El Paso Co., (A) Standard Eng. & Constr. Co., 518-19 E. & C. Bldg., (awarded contract); (B) J. F. Roberts Constr. Co., 206 Tramway Bldg.; (C) Colorado Bridge & Constr. Co., 501 Gas & Electric Bldg. The unit bids were as follows:

	A	B	C
1 acre clearing and grubbing	$100.00	$80.00	$50.00
98,000 cu.yd. common excavation	.18	.22	.25
16,400 cu.yd. rock excavation	.95	.80	1.25
12,300 cu.yd. borrow fill	.18	.22	.25
42,000 sta. yd. overhaul	.02	.02	.02
3,110 cu.yd. gravel shoulder	.80	2.00	3.75
345 cu.yd. sand cushion	.90	1.50	2.25
43,776 sq.yd. concrete pavement	2.15	2.10	2.45
837 cu.yd. concrete class "A"	15.50	16.50	21.00
91,710 lb. reinforcing steel	.05	.05	.07
5.8 M bd. ft. timber headers	60.00	60.00	70.00
200 sq.yd. rip rap	.80	2.00	1.25
7,352 lin.ft. timber guard fence	.48	.50	.75
650 lin.ft. 8 in. vitrified tile underdrain	.40	.80	2.20
Sub-totals	$155,147	$160,313	$163,742
Cottonwood Creek Bridge			
916 cu.yd. concrete class "A"	$17.50	$18.50	$25.00
3,500 lb. structural steel	.08	.06	.08
119,400 lb. reinforcing steel	.05	.05	.07
264 handrail spindles	1.50	1.00	2.00
Sub-totals	$22,676	$23,390	$26,330
10 per cent for engineering and contingencies	17,782	18,370	19,007
Extended grand totals	$195,605	$202,073	$209,079

ROAD WORK—OREGON

Bids were opened by State Highway Comn., Nov. 21, for constructing .94 mi. Oregon-City-Canemah Sect., Pacific Highway, Clackamas Co., (A) Rajotte, Winton, Inc., Realty Bldg., Spokane; (B) D. Samuels, Salem; (C) A. D. Kern, Portland. The unit bids were as follows:

Unit A	A	B	C
3.2 acres clearing and grubbing	$1,200.00 A & B	$75.00	$300.00
600 cu.yd. common excavation	1.00	.40	.80
600 cu.yd. intermediate excavation	1.00	.60	1.10
1,800 cu.yd. solid rock excavation	2.25	1.40	2.00
3,150 cu.yd. disposal of waste	.20	.25	.25
80 cu.yd. class "B" concrete	30.00	30.00	20.00
150 cu.yd. excavation for culverts	2.50	1.50	
Extended totals	$8,655	$6,608	$7,728
Unit B			
4 acres clearing and grubbing (lump sum)		475.00	500.00
5,000 cu.yd. common excavation	.50	.50	.90
7,000 cu.yd. intermediate excavation	.70	.70	1.25
25,000 cu.yd. solid rock excavation	1.50	1.60	1.85
35,000 cu.yd. overhaul over 500 ft. over 100 ft.	.05	.05	.05
13,900 cu.yd. disposal of waste	.20	.20	.25
50 lin.ft. 18-in. reinforced-concrete pipe	4.00	3.00	3.00
130 lin.ft. 24-in. reinforced-concrete pipe	5.00	4.00	4.00
500 lin.ft. 6-in. drain tile	.75	.25	.40
100 cu.yd. rock or gravel backfill	1.50	3.00	3.00
1,000 lin.ft. wood guard fence	1.00	1.25	.90
650 cu.yd. class "B" concrete	25.00	25.00	20.00
1,250 cu.yd. rubble and cement masonry	10.00	15.00	12.00
1,200 lin.ft. parapet walls	3.50	3.00	3.50
2,000 cu.yd. excavation for culverts	2.00	1.50	2.00
Extended totals	$89,955	$96,350	$103,495
Extended grand totals	$98,610	$102,958	$111,223

$87,000. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs.

Calif., Crescent City—Soon takes new bids grading and paving various streets, 23,900 cu.yd. grading excav., 316,300 sq.ft. grading surface, 316,300 sq.ft. asphaltic macadam pavement, 168,418 sq.ft. asphaltic macadam pavement to be rebuilt, etc. Former contract rescinded. C. C. Kennedy, Call Bldg., San Francisco, engr. Noted Sept. 28.

Calif., Fresno—Soon takes bids improving portions of Tuolumne, Divisadero, R and S Sts., etc., 198,940 sq.ft. grading, 186,427 sq.ft. asphaltic paving, 12,012 sq.ft. concrete gutter, 7,504 lin.ft. concrete curb, 13,725 sq.ft. concrete walks, etc. W. Stranahan, city engr.

Calif., San Diego — Had plans prepared paving with 1½ in. topeka asphalt on 2½ in. asphaltic concrete, Maple, Nutmeg and Olive Sts., 389 lin.ft. cement curbing, 1,033 sq.ft. cement sidewalks, 19,879 sq.yd. bituminous concrete; paving with 2 in. bituminous concrete on 4 in. cement concrete base, 1 in. binder, A St. from 4th St. to Kettner Blvd., and 2nd St. from A to R Sts., 551 lin.ft. cement curbing, 2,263 sq.ft. cement sidewalks, 13,297 sq.yd. paving. F. A. Rhodes, City Hall, engr.

Calif., San Mateo—Plans improving various streets, involving 25,000 sq.ft., 40,000 sq. ft., 120,000 sq.ft., 244,500 sq.ft. 1½ in. asphalt on 6, 5, 4½ and 4 in. concrete respectively, 6,970 cu.yd. excav., 1,000 cu.yd. fill, 16,000 lin.ft. standard concrete curb, 1,050 lin.ft. parkway concrete curb, 660 sq.ft. concrete gutter, 3,100 lin.ft. 6 in. sewers, 3,650 lin.ft. 4 in. sewer laterals, 2,130 lin.ft. 18 in. drain, 34,800 sq.ft. cement walks, removing 3,400 lin.ft. curbs, 770 sq.ft. driveway approaches, etc. G. S. Whitehead, San Mateo, engr.

Ontario—Dept. Pub. Highways, Parliament Bldg., Toronto, plans paving 11 mi. provincial highway between St. Thomas and Aylmer, asphalt on concrete. $400,000. G. Hogarth, ch. engr.

Ontario — Provincial Highway Dept., Parliament Bldgs., Toronto, plans to take over county road between Orangeville and Arthur and build 22 mi. gravel or stone macadam highway, bridges and culverts. $500,000. G. Hogarth, ch. engr.

Streets and Roads (Continued)

Ont., Oshawa — Plans 800 ft. asphalt pavement on Bruce St. from Ritson Rd. to Drew St., 24 ft. wide, with concrete curbs and gutters, $35,000; also 8,000 ft. of 4 ft. concrete walks on various streets, $8,300. F. E. Hare, city clk.

Ont., Ottawa — Bd. Control takes bids early in spring, tarvia macadam on Waverly Rd. from Robert to Bank Sts.; asphalt on Carling Ave. from Parkdale to Fairmont Aves., $50,000. A. F. Macallum, city engr.

Ont., Owen Sound—Plans 4 mi. asphalt pavement, average width 30 ft. $300,000. D. H. Fleming, city engr.

Ont., Sandwich—Takes bids in January for new pavements, opening streets, sewers and watermains. $106,500. E. R. North, town clk.

Ont., Stratford—Plans to expend $223,969 on asphalt and concrete pavements, and concrete sidewalks. A. B. Manson, city engr.

Ont., Toronto — Plans paving, curbing, guttering and laying storm sewers in Kingston Rd. from Dixon Ave. to Main St., 4,800 ft. long, 40 ft. wide. $330,089. R. C. Harris, city engr.

Ont., Toronto—Plans paving 600 ft. Dundas St. from Yonge to Victoria Sts., asphalt on concrete with storm sewers and provision for double car tracks, $25,512. R. C. Harris, city engr.

Ont., Toronto—Plans grading 3,000 ft. Glendonwynne Rd., 66 ft. wide, $16,335, also 2,000 ft. 4 ft. 6 in. concrete sidewalks, $3,275; extending and grading Pailton Crescent from Baliol St. to Davisville Ave., 600 ft. long, 66 ft. wide, $10,750; extending and grading Heather St., 1,200 ft. long, 66 ft. wide, and St. Clair Ave. E. across Rosedale Ravine to Inglewood Dr., 2,000 ft. long, 86 ft. wide, $50,000. R. C. Harris, city engr.

Ont., Toronto — Having plans prepared widening Parliament St., incl. asphalt pavements and concrete sidewalks. $155,000. R. C. Harris, city engr.

B. C., Vancouver—Voted $150,000 by law and soon takes bids for new roads. C. E. Tisdall, mayor.

BIDS DESIRED

N. Y., Brooklyn—Jan. 4, by Park Bd. at office Dept. Parks, Municipal Bldg., New York City, improving Bay Parkway from 59th to 78th Sts., here. F. D. Gallatin, pres.

N. J., Atlantic City—Jan. 11, by Bd. City Comrs., City Hall, improving portions of Fairmount Ave. and other avenues. J. W. Hackney, City Hall Annex, city engr.; adv. this issue.

Virginia — Jan. 11, by State Hy. Comn., Richmond, constructing 6.28 mi. Project F-186A, Route 12, Pittsylvania Co.; 8.44 mi. Project S-185, Route 7, alternate bids requested for soil roadway; 1.98 mi. Project S-256, Route 11, Tazewell Co.; bridges over Massaponax Creek, Project F-2053, Route 1; 0.84 mi. Project F-32, Route 6; 11.53 mi. Project S-208, Route 11; repairs to bridges, Project SR-298, Route 7, Warren Co. G. P. Coleman, Richmond, highway comr.; adv. this issue.

Va., Richmond—Jan. 2, by Clerk Henrico Co., paving 6.6 mi. Nine Mile road from here to Seven Pines, 16 ft., 15,000 cu.yd. excav., 62,000 sq.yd. surface.

Florida—Jan. 10, by State Hy. Dept., Tallahassee, grading, constructing timber bridge and placing rock base on 8.75 mi. Rd. 8 from Sta. 243, south of Lake Stearns to line between Townships 35 and 36, Project 562, Highlands Co.; placing 77,000 cu. yd. dredged embankment on 2.65 mi. Rd. 125 from Sta. 308 to Sta. 448, Project 534, Brevard Co. W. F. Cocke, state highway engr.

Louisiana—Jan. 11, by State Hy. Comn., Reymond Bldg., Baton Rouge, grading and gravel surfacing 5 mi. Federal Aid Project 43, Sect. A, Vinton-Orange Highway, Calcasieu Parish.

Ohio—Jan. 5, by L. C. Herrick, dir. highways, Columbus, paving 1.39 mi. Sect. M, Cleveland-Massillon Rd. I. C. H. 17, 17 ft., rein.-con. and brick $73,082, bituminous concrete and brick $73,436, brick $76,962; 1.7 mi. Sect. L, Cleveland Massilon Rd., I. C. H. 17, rein.-con $72,672, bituminous concrete $74,290, brick $78,175; 3.44 mi. Sect. K, Cleveland-Massilon Rd. I. C. H. 17, rein.-con. and brick $158,239, bituminous concrete and brick $159,171, brick $167,992; 2.7 mi. Sect. J, Cleveland-Massillon Rd., I. C. H. 17, rein.-con. $116,085, bituminous concrete, $116,934, brick, $124,668; 1.49 mi. Sect. I Cleveland-Massillon Rd., I. C. H. 17, rein.-con, and brick $76,902, bituminous concrete and brick $77,352, brick, $81,073.

Ind., Albion—Jan. 6, by Auditor Noble Co., grade and gravel 15,125 ft. Clarence Leiter Rd., 16 ft., $26,050; 27,258 ft. F. L. Grady Rd., 16 ft., $25,652; concrete and gravel 8,310 ft. William Appleman Rd., 16 ft., 5,421 sq.yd. concrete on concrete, $27,389. W. T. Knox, Albion, engr. Noted Dec. 21.

Ind., Columbia City—Jan. 4, by Auditor Whitely Co., grading and graveling 45,158 ft. Aaron Mishler Rd., 16 ft., $49,868; 18,577 ft. Austin Hibely Rd., 16 ft., $29,304; 10,585 ft. County Rd. 3, Sect. 2, 18 ft., $25,245; paving 7,992 ft. County Rd. 3, 30 ft., crushed stone, $26,769. C. M. Auspaugh, Columbia City, engr. Noted Dec. 21.

Ind., Elizabethtown—Jan. 5, by Auditor Bartholomew Co., grading and graveling 29,154 ft. Sawyer Rd., 16 ft. $50,000. H. C. Thomas, Elizabethtown, engr.

Ind., Lafayette—Jan. 6, by Auditor Tippecanoe Co., grading and graveling 19,201 ft. John Gushwa Rd., 16 ft. $25,741. E. C. Minton, Lafayette, engr.

Ind., Marion—**Jan. 4**, by Auditor Grant Co., paving 2,125 ft. Dempsey Seybold Rd., 30 ft. crushed stone and asphalt. $26,035. G. Swisher, Marion Engr. Noted Dec. 21.

Ind., Vincennes—**Jan. 4**, by Auditor Knox Co., grading and graveling 7,920 ft. John R. McClure Rd., 30 ft., $30,543; 12,885 ft. Royse Davis Rd., 16 ft., $25,348; 11,300 ft. Obermeyer Rd., 16 ft., $27,712. G. A. Haskin, Vincennes, engr. Noted Dec. 21.

Ind., Washington — Jan. 5, by Auditor Daviess Co., grading and graveling 17,530 ft. Andrew T. Myers Rd., 16 ft. $26,231. W. L. McCormick, Washington, engr. Noted Dec. 21.

Michigan—Jan. 16, by State Hy. Dept., Lansing, grading and surfacing 7.255 mi. Federal Aid Project 64, Crawford and Otsego Counties incl. 31,821 cu.yd. excav., 76,612 sq. yd. gravel or stone-gravel.

Ia., Elkader—Jan. 10, for 21,650 sq.yd. vitr. brick, asphalt or concrete pavement, 11,000 lin.ft. curb and gutter, 6,450 cu.yd. grading. $65,000. M. Tschirgi & Son, 712 Amer. Trust Bldg., Cedar Rapids, engrs. Noted Sept. 7.

South Dakota — Jan. 4, by State Hy. Comn., reinforcing at office of Auditor Yankton Co., Yankton, grading 13.199 mi. Project 65, incl. 125,980 cu.yd. excav., 272 cu.yd. concrete, 24,800 lb. reinforcing steel, also graveling 19.95 mi. Project 77, incl. 5,000 cu.yd. excav., 30,000 cu.yd. gravel, both projects in Yankton Co.; also taking bids at office Auditor Clay Co., Vermilion, grading 5.98 mi. Project 97, incl. 37,233 cu.yd. excav., 124 cu.yd. concrete, 9,949 lb. reinforcing steel, Clay Co.

Ark., Ft. Smith — Jan. 25, paving 22 blocks in Street Impvt. Dist. 16, vitr. fiber block and asphalt filler or bitulithic. W. L. Winters, Ft. Smith, engr.

Calif., Modesto—Jan. 9, by Supervs. Stanislaus Co., paving 7 mi. West Side Highway from West Co. line, and 3.5 mi. Escalon-Oakdale Rd. between Burnett Station and San Joaquin Co. line, 16 ft. wide, 5 in. portland cement concrete in center, 7 in. concrete on edges, or 1½ in. topeka on 2½ in. black base, or 1½ in. warrenite on 3½ in black base. J. H. Hoskins, co. surv.

Calif., San Diego—Jan. 8, by A. H. Wright, city clk., improving Ivy St. F. A. Rhodes, city engr. Noted Nov. 23.

Calif., San Francisco—Jan. 10, by Bd. Pub. Wks., improving 8th St. between Carolina and 16th Sts., incl. crossings of Hooper, Irwin and Wisconsin Sts., 1,077 cu.yd. excav., 1,091 lin.ft. concrete curb, 14,778 sq.ft. artificial stone walks, 338 lin. ft. 12 in. pipe sewers, 355 lin.ft. 10 in. pipe culvert, etc; Coleridge St. between Eugenia and Lizzie Sts., incl. crossings of Eugenia and Lizzie Sts., 320 cu.yd. excav., 355 lin.ft. concrete curb, 786 sq.ft. artificial stone walks, 8,709 sq.ft. concrete pavement, etc., for City and San Francisco Co. M. M. O'Shaughnessy, city engr.

Quebec—Jan. 30, by J. L. Boulanger, deputy minister of highways, Quebec, 4.54 mi. Quebec-St. Simeon, in Giffard and St. Joachim, tar macadam. M. Nectkar, ch. engr.

BIDS RECEIVED

West Virginia—State Hy. Dept., Charleston, grading 7 mi. Charleston-Kearneysville Rd., Project 3026, Jefferson Co., 35,000 lin. ft. clearing, 38,200 cu.yd. unclassified excav., 1,500 sta.yd. overhaul, 320 cu.yd. concrete, 1,800 lb. reinforcing, 1,490 lin.ft. 15-24 in. corrugated metal pipe, 8,600 cu.yd. stone subbase course, 8,900 cu.yd. broken stone base course, 62,200 sq.yd. waterbound macadam surface course, from Moore & Lesley, Staunton, Va., $139,443, M. Cox, Martinsburg, $150,769, Edwards-D[illegible] Co., Greenburg, Pa., $142,317, 6 mi. [illegible]dy Springs-Summers Co. line Rd., Proj. [illegible]052, Raleigh Co., 27,300 lin.ft. clearing, [illegible]00 cu.yd. unclassified and 500 cu.yd. [illegible]ro. excav., 20,000 sta.yd. overhaul, 1,60[illegible] concrete, 29,000 lb. reinforcing, 1,75[illegible] cement rubble masonry, 1,400 lin.ft. [illegible]m vitr. clay pipe, 10,000 cu.yd. bo[illegible] rock for special rock fill, etc., from K. Newell Co., Maysville, Ky., $82,697; [illegible] Bros., St. Albans, $86,300, Sutton [illegible] Co., Ashland, Ky., $87,311. All [illegible] jected. Noted Nov. 30.

North Carolina—State Hy. Dept., Raleigh, clearing and grading 14.1 mi. State Project 201, Carteret Co., from Duplin Co[illegible] Co., Warsaw, $49,273; Eagle Eng. Co., New Bern, $55,865; O. A. Mann & Co., La Grange, Ga., $72,779. Noted Nov. 30.

Kentucky—State Hy. Dept., Tallahassee, grading (1) 8.8385 mi. Louisville-Paducah Rd. from Marion to Livingston Co. line, Federal Aid Project 91, State Project 8, Sect. A, Crittenden Co. (2) 17.045 mi. Louisville-Paducah Rd., Federal Aid Project 92, State Project 8, Sect. B, Livingston Co. (3) 9.639 mi. Frenchburg-West Liberty Highway, Federal Aid Project 83, Menifee Co. (4) 5.018 mi. Stanton-Winchester Rd., Federal Aid Project 87, Sect. A, Powell Co., paving with water bound macadam (5) 9.55 mi. Vanceburg-Maysville Rd. from Tollesboro to Valley, State Project 20, Sect. A, Lewis Co., paving with rein.-con., (6) 8.501 mi. Jackson Highway from Jefferson Co. line to Bloomfield, Federal Aid Project 86, Sect. A, Bullitt, Spencer and Nelson Counties, (a) concrete masonry and vitr. pipe (b) concrete masonry and concrete pipe (c) cement rubble masonry and vitr. pipe (d) cement rubble masonry and concrete pipe (e) concrete masonry and c.i. pipe (f) cement rubble masonry and c.i. pipe (g) Class A concrete (h) Class B concrete (i) wooden post guard rail and vitr. pipe (j) wooden post guard rail and concrete pipe (k) wooden post guard rail and c.i. pipe (l) concrete post guard rail and vitr. pipe (m) concrete post guard rail and concrete pipe (n) concrete post guard rail and c.i. pipe, from Brantley & Cosle, Knoxville, Tenn., (street address not available). (1a) $86,757 (1b) $87,462 (1c) $86,494 (1d) $87,198; Corunn Bros., Madisonville, (1a) $91,201 (1b) $90,013 (1c) $89,398 (1d) $88,210; Ellis & Smeathers, Owensboro, (2a) $129,041 (2b) $130,084 (2c) $120,600 (2d) $121,643 (3a) $100,005 (3b) $98,256 (3c) $84,009 (3d) $82,260 (3e) $98,750 (3f) $82,753 (4c) $61,754 (4d) $59,870 (4f) $60,478; Costello Bros., Henson Bldg., Knoxville, Tenn., (2a) $134,493 (2b) $136,473 (2c) $125,861 (2d) $127,841; Z. A. Walters, Salyersville, (3a) $91,531 (3b) $92,552 (3c) $82,494 (3e) $93,590; Codell-Byans, Winchester, (4a) $66,398 (4b) $65,094 (4c) $61,188 (4d) $59,884 (4e) $67,701 (4f) $62,492; Vermillion Constr. Co., Barboursville, (4a) $66,173 (4b) $65,502 (4e) $67,207; J. W. Harris, Covington, (5g) $96,268 (5h) $95,828; Crippen Constr. Co., Mercantile Bldg., Knoxville, Tenn., (5g) $108,664 (5h) $108,096; Mills & Connolly, (5g) $127,384 (5h) $127,316; J. H. Cahill, 1540 9th St., Louisville, (6i) $521,495 (6j) $499,519 (6k) $501,911 (6l) $526,816 (6m) $504,841 (6n) $507,233. Noted Dec. 14.

Ohio—Dept. Highways and Pub. Wks., Columbus, opened bids Dec. 22, grading, bridging and paving roads in following counties:

Licking-Knox Co., Sect. "K" Columbus-Millersburg Rd., 1.42 mi. rein.-con. from Walsh & McDaniel Co., Columbus, $47,391; Newark Paving & Const. Co., Newark, $47,422; H. Strodbeck, Ashland, $48,047. (Street addresses not available.)

Medina Co., Sect. "Medina West," Ashland-Medina Rd., .83 mi., H. Strodbeck, Ashland, rein.-con., $33,912; brick, $40,521.

Lorain Co., Sect. "N," "O," "P" Oberlin-Norwalk Rd., 5.14 mi. brick, Ohio Contg. Co., Elyria, $245,623, Hill & Hill, Elyria, $240,937, Highway Const. Co., Elyria, $232,108 bituminous concrete, (a-2a) Franklin Asphalt Paving Co., 209 South High St., Columbus, $166,751, Ohio Contracting Co., Elyria, $186,270, General Asphalt Paving Co., (no address), Cleveland, $169,040; bituminous concrete, (a-2b) Franklin Asphalt Paving Co., Columbus, $178,986, McArthur & Co., Kenton, $205,846, Cleveland Trinidad Paving Co., The Arcade, Cleveland, $205,855, bitulithic, Highway Constr. Co., Elyria, $227,207; Hinkle & Sullivan, Cincinnati, (street address not available), $252,195. Noted Dec. 14.

Ohio—Dept. Highways and Pub. Wks., Columbus, opened bids Dec. 19, grading, bridging and paving roads in following counties:

Ashland Co., Sect. "B-2," Ashland-Norwalk Rd., 1.093 mi., rein.-con., from Allen County Paving Co. Lima (street address

Streets and Roads (Continued)

not available), $32,037, H. Strodbeck, Ashland, $32,315. E. A. Freshwater & Sons, Painesville, $32,819; brick, H. Strodbeck, Ashland, $37,549. E. A. Freshwater & Sons, Painesville, $38,873. Allen County Paving Co., Lima, (street addresses not available.) $39,998.

Lake Co., Sect. "B," Cleveland-Buffalo Rd., 1.089 mi., brick, G. Keener, Jr., Madison, $53,969. Gould & Mayback, Cleveland, $58,147. E. A. Freshwater & Sons, Painesville, (street addresses not available), $57,042.

Lake Co., Sect. "A" Medina-Norwalk Rd., 3.42 mi., asphalt macadam oil. Losey Road Constr. Co., Kenton, $49,245. H. J. Hart, Elyria, $54,397; tar macadam, Losey Rd. Const. Co., Kenton, $49,840, Barnes & Talbert, Rocky Ridge, $54,011 rein.-con., Losey Rd. Constr. Co., Kenton, $66,691, Barnes & Talbert, Rocky Ridge (street addresses not available), $65,173.

Lorain Co., Sect. "E" Cleveland-Sandusky Rd., 2.11 mi., brick, Ohio Contracting Co., Elyria, $207,954. E. A. Freshwater & Sons, Painesville, $211,929, McArthur & Co., Kenton, $212,224; bituminous concrete oil, Highway Const. Co., Elyria, $165,129, Franklin Asphalt Paving Co., 209 South High St., Columbus, $170,946, McArthur & Co., Kenton, $180,681; bituminous concrete, lake, McArthur & Co., Kenton, $180,681, Franklin Asphalt Paving Co., Columbus, $181,544, Cleveland Trinidad Paving Co., The Arcade, Cleveland, $190,878; bitulithic, Hinkle & Sullivan, Sullivan, $222,911. Noted Dec. 7.

Tex., Coleman — Coleman Co. grading, gravel surfacing, etc., (1) 8 mi. Coleman-Comanche Rd., 16 ft., 526 cu.yd. concrete, 23,435 cu.yd. borrow and 19,431 cu.yd. roadway excav., 15,295 cu.yd. gravel surfacing, 31,904 lb. reinforcing, (2) 6 mi. Santa Anna-Comanche Rd., 16 ft., 175 cu.yd. concrete, 21,623 cu.yd. roadway and 5,295 cu yd. borrow excav., 6,133 cu.yd. gravel surfacing, (3) 9 mi. Santa Anna-Buffalo Rd., 16 ft., 422 cu.yd. concrete, 49,000 cu.yd. earth excav., 10,480 cu.yd. gravel surfacing, 34,209 lb. reinforcing, (4) 12 mi. Santa Anna-Trickham Rd., 16 ft., 1,200 cu.yd. concrete, 74,500 cu.yd. earth excav., 15,775 cu.yd. gravel surfacing, 122,000 lb. reinforcing, (5) 11 mi. Santa Anna-Red Bank Rd., 16 ft., 749 cu.yd. concrete, 12,821 cu.yd. gravel, 47,294 lb. reinforcing, from Womack Constr. Co., Sherman, (1) $52,986 (2) $23,-120 (3) $42,990 (4) $92,877 (5) $32,627; McClung Constr. Co., Cleburne, (1) $53,213 (3) $45,308 (4) $94,586; Smith Bros., Crockett, (1) $53,757 (2) $23,075 (5) $33,-616; Scarborough & Davis, Gaston Bldg., Dallas, (3) $44,671 (4) $93,968; McCoy & Richards, Arlington, (5) $33,926. Engrs. ests. (1) $57,500 (2) $25,500 (3) $47,500 (4) $100,000 (5) $37,500.

Tex., Jefferson—Marion Co. grading, claying, gravel surfacing and bridging (1) 8.8 mi. State Highway 8, from here to Cass Co. line, 16 ft., (2) 3.56 mi. State Highway 8, from here to Marion Co. line, 16 ft., from Henderson & Co., Omaha, (1) $53,752, (2) $34,115; Womack Constr. Co., Sherman, (1) $56,524 (2) $36,490; Cocke & Turner, Marshall, (1) $57,666 (2) $39,176. Engrs. est. (1) $100,980 (2) $66,945. Noted Nov. 23.

Tex., Kerrville—Kerr Co. grading, gravel surfacing, etc., 4.45 mi. State Highway 41, 16 ft., 639 cu.yd. concrete, 15,425 cu.yd. roadway and 11,883 cu.yd. borrow excav., 9,458 cu.yd. gravel surfacing, 73,940 lb. reinforcing, from G. Alvis, Winnsboro, $30,-953; McCall-Moore Eng. Co., Amicable Bldg., Waco, $32,823; R. G. Buckner & Son, Cleburne, $32,502. Engrs. est. $35,000.

Tex., Waco — McLennan Co. grading, gravel surfacing, sledged stone base with bituminous topping 3.7 mi. State Highway 7, McGregor Rd., 16 ft., from Wear & Thomas, Rogers, $29,947; D. H. Buchanan, City Natl. Bank Bldg., Temple, $31,736; McCoy & Richards, Arlington, $31,902. Engrs. est. $32,075. Noted Dec. 7.

Oklahoma—State Hy. Comn., Oklahoma City, hardsurfacing 9.684 mi. Federal Aid Project 74, Murray Co., from Western Constr. Co., Ardmore, $80,992, T. C. Ottinger, Hinton, $124,468, Allen & Harrison, 315 Empire Bldg., Oklahoma City, $110,-985; 12.278 mi. Federal Aid Project 82, Latimer Co., from V. C. Cossata, Oklahoma City (street address not available); 1.986 mi. Federal Aid Project 90, Carter Co., from Baum Constr. Co., Durant, $34,993, V. C. Cossata, Oklahoma City (street address not available), $63,345. Rheinhart & Donovan, 803 Tradesmen Natl. Bldg., Oklahoma City, $60,979.

California—State Hy. Dept., Sacramento, grading and asphalt macadam paving (1) 8.2 mi. road between Morrisons Crossing and Marysville, Yuba Co. (2) 8.2 mi. between Hollister and Pacheco Pass Rd., San Benito and Santa Clara Counties, (3) 14.2 mi. road between westerly boundary and Califa, Madera Co., grading and concrete paving (4) 1.8 mi. between Hercules and Rodeo, Contra Costa Co., grading (5) 7.4 mi. between Hueneme Rd. and Rindge Ranch, Ventura Co., from Blumenkranz & Vernon, Farmers & Merchants Bank Bldg., Stockton, (1) $141,275 (3) $238,172; W. E. Hall, 500 Market St., Riverside, (1) $190,-575 (2) $164,636 (3) $224,494; Granite Constr. Co., Watsonville, (2) $131,732; J. Phillips, 637 Santa Rey Ave., Oakland, (2) $210,412; R. T. Shea, 169 West 7th St., Riverside, (3) $193,648; L. Tagnon, 1735 Napa St., Vallejo, (4) $33,519; Lord & Bishop, Cloverdale, (4) $40,851; T. M. Burns, 2207 N St., Sacramento, (4) $41,-620; Hauser Constr. Co., 1109 Hobart Bldg., San Francisco, (5) $598,085; W. B. Arndt, Chronicle Bldg., San Francisco, (5) $599,-644; Utah Constr. Co., 824 Phelan Bldg., San Francisco, (5) $627,285. Noted Dec. 7.

Calif., Daly City—Grading 37,000 cu.yd. in Vista Grand Park, from C. J. Lindgren, El Cerrito Ave., Burlingame, $1.25 per cu.yd.

Calif., Los Angeles—Improving Melrose Ave. between Seward and Gower Sts., (1) grading (2) 184,455 ft. concrete pavement (3) 57,200 ft. grading, oiling and rolling (4) 5,418 ft. curb (5) 8,752 ft. sidewalks, from W. Liddington, 420 East 60th St., (1) $7,309 (2) $0.23 (3) $0.059 (4) $0.52 (5) $0.195; Fairchild-Gilmore-Wilton Co., Los Angeles Ry. Bldg., (1) $9,300 (2) $0.25 (3) $0.08 (4) $0.60 (5) $0.21; W. D. McCray, Amer. Bank Bldg., (1) $6,500 (2) $0.24 (3) $0.07 (4) $0.54 (5) $0.20.

CONTRACTS AWARDED

N. Y., St. George—J. A. Lynch, pres. Richmond Boro, Boro Hall, repaving roadway of Bay St., granite block on 6 in. concrete, to M. L. Sachs, 246 South 9th St., Brooklyn, $34,128. Noted Dec. 14.

West Virginia—State Hy. Dept., Charleston, grading 5 mi. Union-Rock Camp Rd., Project 3045 Monroe Co., 26,250 lin.ft. clearing, 32,400 cu.yd. unclassified and 8,000 cu.yd. borrow excav., 839 cu.yd. concrete, 25,200 lb reinforcing, 1,410 lin.ft. 18 in. vitr. clay pipe, to J. Carola, Ronceverte, $62,972; 6 mi. Gilboa-Drennen Rd., Project 3047, Nicholas Co., 31,680 lin.ft. clearing, 73,700 cu.yd. unclassified and 3,450 cu.yd borrow excav., 618 cu.yd. concrete, 13,350 lb reinforcing, 450 cu.yd. cement rubble masonry, 1,920 lin.ft. 18 in. vitr. clay pipe, to Tincher & Landacre, Richwood, $75,734; 6 mi. Sunset-Frost Rd., Project 3182 A, Pocahontas Co., 31,450 lin.ft. clearing, 61,400 cu.yd. unclassified and 1,100 cu.yd. borrow excav., 647 cu.yd. concrete, 9,265 lb. reinforcing, 2,030 lin.ft. 18 in. vitr. clay pipe, to B. C. Cornett, Independence, Va., $62,367; 5½ mi. Marrowbone-Crum Rd., Project 3188, Wayne Co., 27,300 lin.ft. clearing, 91,000 cu.yd. unclassified excav., 20,000 sta.yd. overhaul, 1,060 cu.yd. concrete, 28,000 lb. reinforcing, 1,750 cu.yd. cement rubble masonry, 1,400 lin.ft. 18 in. vitr. clay pipe, 10,000 cu.yd. borrow of rock for special rock fill, to C. E. Price, Huntington, $113,288; 8.3 mi. Gassaway-Frametown Rd., Project 3157, Braxton Co., 43,800 lin.ft. clearing, 125,000 cu.yd. unclassified and 43,721 cu. yd. borrow excav., 18,038 sta.yd. overhaul, 1,845 cu.yd. concrete, 138,638 lb. reinforcing, 2,994 cu.yd. cement and 2,363 cu.yd. dry rubble masonry, to Sutton Constr. Co., Ashland, Ky., $210,478; 8.2 mi. West Union-Ritchie Co. line Rd., Project 3160, Doddridge Co., 42,967 lin.ft. clearing, 90,000 cu.yd. unclassified and 15,570 cu.yd. borrow excav., 13,146 sta.yd. overhaul, 731 cu.yd. concrete, 9,001 lb. reinforcing, 3,016 lin.ft. 18-36 in. rein.-con. pipe, etc., to Rogers & Shumway, Worthington, $109,615; Valley Head-Webster Co. line Rd., Project 3033, Randolph Co., 62,840 lin. ft. clearing, 160,-000 cu.yd. unclassified and 6,000 cu.yd. borrow excav., 5,000 sta.yd. overhaul, 1,340 cu.yd. concrete, 30,000 lb. reinforcing, 2,000 cu.yd. cement and 2,700 cu.yd. dry rubble masonry, 4,500 lin ft. 15-24 in. corrugated metal pipe, etc., to Belasco Constr. Co., Webster Springs, $187,244; 7 mi. Upper Tract-Grant Co. line Rd., Project 3014, Pendleton Co., 31,020 lin.ft. clearing, 50,000 cu.yd. unclassified and 3,900 cu.yd. borrow excav., 3,300 sta.yd. overhaul, 723 cu.yd. concrete, 9,000 lb. reinforcing, 1,820 lin.ft. 15-24 in. corrugated metal pipe, etc., to J. J. Battershell & Son, Virgilina, Va., $64,525; Northwestern Turnpike, Project 122 A, Mineral Co., 42,670 lin.ft. clearing, 55,000 cu.yd. unclassified excav., 19,000 sta. yd. overhaul, 1,050 cu.yd. concrete, 10,600 lb. reinforcing, 3,350 lin.ft. 15-24 in. corrugated metal pipe, etc., to J. J. Battershell & Son, Virgilina, Va., $79,032; grading and gravel surfacing 3 mi. St. Marys-Belmont Rd., Project 3078 A, Pleasants Co., 12,474 lin.ft. clearing, 36,000 cu.yd. unclassified and 5,425 cu.yd. borrow excav., 1,000 sta. yd. overhaul, 590 cu.yd. concrete, 410 cu. yd. cement rubble masonry, 706 lin.ft. 15-30 in. rein.-con. pipe, 7,400 cu.yd. gravel surfacing, etc., to Rogers & Shumway, Worthington, $54,707; 2.12 mi. New Martinsville-North Rd., Project 3082, Wetzel Co., 11,240 lin.ft. clearing, 9,350 cu.yd. unclassified excav., 129 cu.yd. concrete, 2,250 lb. reinforcing, 274 lin.ft. 15-18 in. rein.-con. pipe, 6,700 cu.yd. gravel surface, etc., to Ritchie & Ritchie, Ravenswood, $19,546; grading and paving with rock asphalt 7.5 mi. War-Newhall Rd., Project 3226, McDowell Co., to W. J. Weakland Co., Charleston, $290,421. Noted Nov. 30.

Fla., Chipley — For 20,000 sq.yd. one course concrete sidewalks, to J. F. Morgan Paving Co., Woodward Bldg., Birmingham, $1.33 per sq.yd.

Fla., Miami—Dade Co. paving with macadam Miami-Gardens Rd., to H. F. Duval, Miami, $11,891; Lemon City Rd., to H. L. Clark, Miami, $4,640; Ave. L and 42nd St. Rds., to S. Roundtree, Miami, $33,-634; 83,500 sq.yd. oiling, to L. H. Lehman, Miami, $0.105 per sq.yd.

Alabama—State Hy. Dept., Montgomery, grading, surfacing and constructing creosoted timber bridges on 18.67 mi. highway from Montgomery Co. line to Union Springs, Federal Aid Projects 1 and 68, Bullock Co., to D. R. Cook & Co., Selma, $326,228; grading and gravel surfacing 13.897 mi. Opelika-Waverly Rd., Lee Co., to R. D. Chambers & Co., West Point, Ga., $172,049. Noted Dec. 21.

Alabama—State Hy. Dept., Montgomery, grading and paving with warrenite bitulithic on stone macadam 11.175 mi. Montgomery-Birmingham Highway from Calera to Chilton Co. line, Federal Aid Project 99, Sect. B, and 11.408 mi. Montgomery-Birmingham Highway, from Calera to Jefferson Co. line, Federal Aid Project 99, Sect. A, to W. T. Taylor Constr. Co., Wilsonville, $412,857 and $362,760 respectively. Noted Dec. 14.

Miss., McComb City—Pike Co., curbing, guttering, grading and building sidewalks, to Lawrence, Nixon & Phillips, Jackson, $100,000.

Ind., Laporte—Laporte Co., gravel surfacing 28,000 ft. Bear Rd., 16 ft., to G. M. Gross Constr. Co., Laporte, $43,900, engrs. est. $57,188; 9,000 ft. Bell Rd., 16 ft., to Taylor & Alkire, Laporte, $25,449, engrs. est. $26,000; grading and graveling 14,300 ft. Sellers Rd., 16 ft., to F. C. Teach, Rensselaer, $25,800, engrs. est. $32,489. Noted Sept. 28.

Ind., Terre Haute — Vigo Co. to Carpenter Constr. Co., Terre Haute (street address not available), graveling 8.5 mi. John N. White Rd., 30 ft., $84,002, engrs. est. $110,983; 13,400 ft. J. A. Crabb Rd., 16 ft., $25,978, engrs. est. $27,800; 11,220 ft. Fromme Rd., 30 ft., concrete, $80,762, engrs. est. $112,769; to J. M. Robertson, Terre Haute (street address not available), 2.25 mi. George Woodsmall Rd., 16 ft., $25,834, engrs. est. $25,512. Noted Dec. 7.

Ind., Warsaw—Paving 12,324 ft. East Market St., 45 ft., 61,633 ft. asphalt on concrete, to Indiana Constr. Co., Warsaw, $93,951. Engrs. est. $97,500.

Ia., Mt. Ayr—Ringgold Co. grading Federal Aid Project 123, 37,900 cu.yd. excav. in connection with overhead crossing over Chicago Great Western tracks, also Project 141, 6 mi. road from Union Co. Line south toward here, 69,046 cu.yd. excav., to C. C. Barnes Co., 323 5th St., Des Moines, $29,-099. Noted Nov. 30.

Ia., Mt. Ayr—Ringgold Co. grading 5.9 mi. primary road west and northwest of Kellerton, to B. N. Dilts & Son, Mason City, 111,868 cu.yd. excav. $0.265 per cu. yd., etc., total $29,645 Noted Dec. 7.

S. D., Canton—E. A. Jones, aud. Lincoln Co., gravel surfacing 17 mi. State Project 8, to Western Bridge & Constr. Co., 748 Peters Trust Bldg., Omaha, Neb. Noted Nov. 23.

Tex., Hondo — Medina Co. grading and gravel surfacing 23.53 mi. highway, 18 ft., to Kuykendall & Shelton, Temple, $149,388. Noted Dec. 7.

Oklahoma — State Hy. Dept., Oklahoma City, grading and concrete paving 3.492 mi. Federal Aid Project 86, Tulsa Co., to Standard Paving Co., 1742 East 6th St., Tulsa, earth excav. at $0.25, loose rock $0.60, overhaul $0.05, borrow $0.27, concrete $18.50, concrete paving $2.35, total $127,-150. Noted Nov. 23.

Okla., Oklahoma City—Paving from Main to Linwood Sts., 1½ in. sheet asphalt, 1 in.

Streets and Roads (Continued)

binder, on 6 in. concrete, to Western Paving Co., Tradesman Natl. Bank Bldg., $28,513.

Arizona—State Hy. Comn., Phoenix, 2 in. asphaltic concrete surfacing 5 mi. road in Pinal Co. from junction of Mesa-Superior Highway with Florence-Superior Highway, westward toward Mesa, 18 ft., to Pacific Constr. Co., Home Builders Bldg., Phoenix, $61,776, with additional material at $8.30 per cu.yd. and $0.30 per ton per mi. haulage.

Oregon—State Hy. Comn., Salem, cement concrete paving 5.67 mi. Holmes Gap-Rickreall Sect. state highway, Polk Co., 16 ft., to Oregon Contract Co., Blake-McFall Bldg., Portland, $135,000; 9.8 mi. Monmouth to Polk Co. line section, 16 ft., to Cummings & Lapoint, 922 Kelly St., Portland, $249,000.

Calif., Los Angeles—Improving 16th St. between Crenshaw Blvd. and Arlington Ave., to G. R. Curtis, 2440 East 26th St., $114,417. Noted Nov. 23.

Calif., Los Angeles — Paving Lexington Ave. between Western Ave. and Gordon St., 123,513 sq.ft. warrenite bitulithic paving, 1,420 sq.ft. grading, oiling and rolling, 2,723 ft. curb, 4,429 sq.ft. walks, 6,842 sq. ft. gutter, etc., to G. H. Oswald, 366 East 5th St., $44,000.

Calif., San Diego—Improving Ft. Stockton Dr. et al., to Fairchilds-Gilmore-Wilton Co., Pacific Electric Bldg., Los Angeles, $39,071. Noted Nov. 2.

Industrial Works

PROPOSED WORK

Mass., Pittsfield — Berkshire Products Corp. plans electric manufacturing plant, $70,000 to $100,000. J. M. Vance, 24 North St., archt.

Mass., Springfield—Springfield Dairy System, 70 Ventura St., plans bottling plant, rein.-con., plain foundation. C. J. Grant, clk.

N. Y., Brooklyn—Brooklyn Edison Co., 360 Pearl St., soon takes bids new power plant, initial capacity, 2 units, 50,000 k.w. each, ultimate total capacity 400,000 k.w., Marshall St. $10,000,000. T. E. Murray, Inc., 55 Duane St., New York, archts. G. L. Knight, 360 Pearl St., engr. This corrects report in Dec. 21 issue.

N. Y., Dunkirk—Amer. Locomotive Co., 30 Church St., New York City, plans brick, addition to plant, here. $50,000. Architect not announced.

N. Y., Troy—Fuller & Warren Co., foot of Monroe St., will rebuild portion of works, on River St., which was recently destroyed by fire. $55,000. Architect not announced.

N. J., Elizabeth—Amer. Type Fdry. Co., Communipaw Ave., Jersey City, plans administration building, 165 ft. long, and assembling plant, 600 ft. long, 1 and 2 story, West Grand St., here. $750,000. Day & Zimmerman, 611 Chestnut St., Phila., engr.

Pa., Tullytown—Megargee Paper Mills, 16 South 5th St., Phila., does not plan to build plant here. This corrects report in Nov. 30 issue.

Pa., Williamsport—Glosser Motor Car Co., 248 William St., plans 3 story and basement, 43 x 66 ft. rein.-con., brick and steel garage, William and West Church Sts. $50,000.

W. Va., Buckhannon—Belgrade Glass Co. plans 1 story, 95 x 315 ft., corrugated iron or brick plant. Architect not selected.

W. Va., Kenova — Morgan Bros. plan hardwood lumber mill. $60,000. Architect not announced.

W. Va., Logan — Kentucky and West Virginia Power Co., 30 Church St., New York City, having plans prepared by F. R. Weller, engr. Mills Bldg., Wash., D. C., 1 story and basement, 50 x 120 ft., boiler house addition, rein.-con., brick and steel. $800,000.

Ky., Paducah—Paducah Ice Co., having plans prepared by Pillsbury-Becker Eng. Co., archts., 119 South 11th St., St. Lauis, Mo., 2 story, 75 x 220 ft., ice plant, South 3rd St. $700,000. Noted Nov. 30.

Ind., Evansville—Evansville Packing Co., Morgan Ave., having plans prepared by H. E. Boyle & Co., archts., Furniture Bldg., 3 story and basement, 31 x 42 ft. packing plant, rein.-con. and brick, concrete pile foundation. $45,000.

Ind., Ft. Wayne—Ft. Wayne Box Co., Calhoun and Superior Sts., plans factory, Superior St. $100,000. Architect not announced.

Ind., Indianapolis—Amer. Can Co., 120 Bway., New York City, plans 4 story and basement, 34 x 230 ft. factory, rein.-con., concrete pile foundation, South East St. $300,000. Private plans.

Ind., Lawrenceburg — Johnson & Klare Furniture Co. plans 3 story and basement, 80 x 300 ft. factory, stucco and frame. $58,000. Private plans.

Ind., Marion—Marion Machine and Fdry. Co. plans 2 story and basement, 45 x 100 ft. machine and foundry addition, brick and steel, 3rd St. $100,000. H. Elder, Marion, archt.

Mich., Albion—Service Caster & Truck Co., c/o H. H. Sheldon, 316 East Porter St., soon lets contract 1 story, 50 x 200 ft. brick and steel factory $40,000. Private plans.

Mich., Albion—See "Buildings."

Mich., Grand Rapids — C. J. Litscher Electric Co., 41 Market Ave., plans to rebuild 3 story and basement, 60 x 130 ft., rein.-con. and brick factory, plain foundation, Market St., recently destroyed by fire. $150,000. Owen, Ames & Kimball, Michigan Trust Bldg., may build on cost plus basis.

Ill., Chicago—Electrical Dealers Supply Co., 162 West Randolph St., having plans prepared by S. N. Crowen, archt., 400 North Michigan Ave., 3 story, 100 x 250 ft. factory, rein.-con., brick and steel, Diversey Ave. near Oakley Ave. $150,000.

Ill., Chicago—Griswold & Walker, 1520 South Halsted St., having plans prepared by O. Van Gunten, archt., 26 East Huron St., 6 story, 100 x 126 ft. warehouse, rein.-con., brick and steel, 1525-35 Newberry Ave. $250,000.

Ill., Peoria — Meyer Furnace Co., 1300 South Washington St., plans to rebuild its factory recently 2destroyed by fire. $100,000.

Wis., Cudahy—Milwaukee Vinegar Co., 79 Buffalo St., Milwaukee, having plans prepared by E. R. Leibert, archt., 432 Bway., Milwaukee, 3 story, 100 x 110 ft., yeast factory, brick and steel, here.

Wis., Iron River—See "Waterworks."

Wis., Madison — Capitol City Garage, South Pinckney St., having plans prepared by F. L. Kronenberg, archt., Carroll Bldg., 2 story, 66 x 165 ft., garage and repair shop, brick, rein.-con. and steel, plain foundation, Washington St. $60,000.

Wis., Madison — L. F. Schoelkopf, 210 East Washington Ave., plans 1 story, 66 x 150 ft., garage and automobile supply station, brick, rein.-con. and steel, plain foundation, East Main St. $50,000. Architect not selected.

Wis., Madison—Wisconsin State Hospital Comn., c/o W. F. Lorenz, Mendotta St., having plans prepared by A. Peabody, archt., Capitol Bldg., 1 story, 45 x 124 ft., brick and rein.-con. garage. $40,000.

Wis., Milwaukee — R. L. Clark, 2218 Meinecke Ave., having plans prepared by C. H. Thoringer, archt., 3328 State St., 2 story and basement, 100 x 140 ft., brick and concrete garage, plain foundation, 20th St. $65,000.

Wis., Stetsonville—Ripon Produce Co., c/o A. E. Wells, secy., Ripon, plans 1 story, 50 x 95 ft., brick, rein.-con. and steel dairy, plain foundation, here. $40,000. Architect not selected.

Wis., Stevens Point—Consolidated Water Power & Paper Co., Wisconsin Rapids, having plans prepared by L. A. De Guere, engr., Wisconsin Rapids, 2 story, paper mill and hydro electric generating plant, brick, rein.-con. and steel, plain foundation. $300,000.

Wis., Stratford — Stratford Light & Power Co. plans hydro electric generating plant with steam auxiliary and distribution system, brick, rein.-con. and steel, plain foundation. $65,000. Architect not selected.

Wis., Waunakee—Waunakee Canning Co., c/o A. P. Kenney, Waunakee State Bank, plans 2 story, 60 x 95 ft., brick, rein.-con. and steel factory, plain foundation. $100,000. Architect not selected.

Wis., Waupaca—Lindsay Light & Power Co. had plans prepared hydro electric generating and power plant, brick and steel, plain foundation. $50,000. Private plans.

Minn., St. Paul—L. W. Jordan Co., 118 West 7th St., plans 2 story and basement, 105 x 190 ft. farage and sales building, rein.-con. and brick, 118 West 7th St. $65,000. Architect not announced.

Okla., Canton—See "Waterworks."

Okla., Weatherford—Having plans prepared power plant, waterworks and electric light extensions. $114,000. V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, engrs.

Wash., Walla Walla—Whitman College plans central heating plant, on Campus. $80,000.

Ore., Astoria—Hammond Lumber Co., Astoria, will build sawmill, planing mill, sash, door and box factory, to replace plant recently destroyed by fire. $700,000. Work will probably be done by day labor.

Ore., Portland—See "Miscellaneous."

Calif., Petaluma—Petaluma Ice & Cold Storage Co., (branch of Natl. Ice & Cold Storage Co., Postal Telegraph Bldg., San Francisco), had plans prepared for alterations, additions and installation of equipment in cold storage plant, rein.-con., here. Cost, incl. equipment $100,000. Private plans.

Calif., Stockton—H. Cowell Estate, c/o W. H. George, secy., 2 Market St., San Francisco, having plans prepared by H. H. Meyers, archt., Kohl Bldg., San Francisco, 1 or 2 story, 80 x 100 x 150 ft., rein.-con. garage, Hunter and Channel Sts., here. $50,000.

Que., Terrebonne—Limoge & Co., plans 40 x 80 ft. rein.-con. and cement factory, $45,000. Work will probably be done by day labor.

Ont., Port Arthur—Pub. Utilities Comn. requested Hydro Electric Comn. of Ontario, University Ave., Toronto, to install additional unit in Cameron Falls power plant on Nipigon River. F. A. Gaby, University Ave., Toronto, ch. engr.

Ont., Toronto — Kellogg Toasted Corn Flakes Co., 40 Strachan Ave., purchased site on Victoria Park Ave. and plans to build concrete, brick and steel factory next year. $150,000.

BIDS DESIRED

Pa., Erie — M. Griswold, c/o Griswold Mfg. Co., Erie, taking bids 2 story and basement, 100 x 150 ft. brick garage, 20th and State Sts. $40,000. Private plans, Northwestern Motor Co., Erie, lessee.

S. C., Great Falls — Jan. 15, by R. S. Mebane, pres. Republic Cotton Mills, 1 story, 400 x 4,000 ft., rein.-con. mill, $500,000. J. E. Sirrine, South Main St., Greenville, archt.

Ind., Evansville—Evansville Packing Co., Morgan Ave., taking bids 3 story, 31 x 42 ft. packing plant, rein.-con. and brick, concrete pile foundation. $45,000. H. E. Boyle & Co., Furniture Bldg., archts.

Ill., Chicago—Nelson Bros., c/o O. Van Gunten, archt., 26 East Huron St. receiving bids 3 story, 50 x 125 ft., rein.-con. brick and steel auto sales and repair shop, 6310-14 Bway. $100,000.

Tex., Waco—Jan. 10, by M. W. Scott & Co., archts., 412½ Franklin St., 4 story, 54 x 104 ft., loft and warehouse, rein.-con. and brick, plain foundation, for Weatherred Transfer & Storage Co., 623 Jackson St. $75,000.

Calif., Oakland—California Packing Corp., 101 California St., San Francisco, receiving bids, factory and warehouse, each 1 and 2 story, rein.-con. and brick, 1st and Filbert Sts., here. P. Bush, 101 California St., San Francisco, engrs.

Calif., San Francisco—A. S. Bugbee, archt., 26 Montgomery St., receiving bids 2 story and basement, rein.-con., garage and service station, capacity 300 cars, 2 street frontages 150 ft. and 130 ft., Stevenson St. between Ecker and Jessie Sts., for Stevenson Garage, Inc., c/o architect. To exceed $40,000. Noted Dec. 14.

CONTRACTS AWARDED

Mass., Holyoke—D. O'Connells Sons, 480 Hampden St., will build 2 story, 110 x 120 ft. garage, brick, plain foundation, Dwight St., by day labor. $50,000.

Pa., Monessen—Monessen Fdry. & Machine Co., 1 story, 32 x 100 ft. plant, to Pittsburgh Bridge & Iron Wks., Rochester.

Pa., Phila.—Breyer Ice Cream Co., 8th and Cumberland Sts., 2 story, factory, 43rd and Woodland Sts., to W. F. Kollee & Co., 2601 Oxford Ave., $45,000.

Pa., Pittsburgh — Superior Auto Accessories Co., 1342 Forbes St., 1 story and basement, 100 x 145 ft. and 78 x 120 ft. garage, Baum Blvd. and Woodworth Ave., to Conley & DeMey, 127 North Hiland Ave. Archts. est. $50,000. Noted Dec. 14.

Va., Alta Vista—Alta Vista Cotton Mill Co. 3 additions to plant, brick and timber to Palmer-Spivey Co., Elizabeth Ave., Charlotte, N. C., $100,000.

La., Baton Rouge — Bd. Regents of Louisiana State University, 1 story, engineering shop and power plant, 325 ft. long with four 100 ft. wings, concrete and brick, to Estes, Williams & Ragsdale, Scimitar Bldg., Memphis, Tenn., $147,158.

Ind., Indianapolis—Amer. Can Co., 120 Bway., New York City, 4 story and basement, 34 x 230 ft. factory, rein.-con., brick and terra cotta tile, to Ferro-Concrete Constr. Co., 3rd and Elm Sts., Cincinnati, O. Archts. est. $300,000.

Industrial Works (Continued)

Ind., Labanon—Cline & Hicks will build 40 x 40 ft. and 60 x 100 ft. machine and service stations, both 1 story, by day labor. $4[illegible]000. Private plans.

Mich., Detroit—Michigan Stamping Co., 11631 Mack Ave., 1 story, 140 x 347 ft. rein.-con., brick and steel factory, Mack Ave., to A. A. Albrecht Co., 1130 Penobscot Bldg.

Ill., Chicago—A. S. Alschuler, archt., 28 East Jackson Blvd., 3 story, 125 x 125 ft. printing plant, rein.-con., brick and steel, Congress and Laflin Sts., to J. W. Snyder, 116 South Michigan Ave. Archts. est. $250,000. Owner's name withheld. Noted Oct. 26.

Ill., Chicago—Yellow Cab Mfg. Co., 57 East 21st St., 1 story, 198 x 368 ft. assembling factory, rein.-con., brick and steel, 5801 Dickens Ave., to Buckley & Anderson, 2040 West Harrison St. Archts. est. $350,000.

Wis., Janesville—J. A. Strimple, 219 East Milwaukee St., 2 story, 113 x 190 ft., garage and pump shop, brick, rein.-con. and steel, plain foundation, Milwaukee St., to T. S. Willis, 328 Hayes Blk. Archts. est. $45,000.

Wis., Madison—University of Wisconsin, 4 story, 62 x 68 ft. service station, incl. garage, electric substation, woodworking shop, etc., brick, rein.-con. and steel, plain foundation, to J. H. Findorff, 601 West Wilson St., $78,987. Archts. est. $85,000.

Wis., Madison — Valvoline Oil Co., 815 East Main St., 2 filling stations and warehouse, brick and rein.-con., plain foundation, to A. D. and J. V. Frederickson, 702 East Main St. Archts. est. $40,000. Noted Nov. 30.

Wis., Merrill—Merrill Handle Co. 1 story, 100 x 108 ft., factory and warehouse incl. cupola, brick and rein.-con., plain foundation, to E. Schield, Merrill. Archts est. $40,000.

Wis., Milwaukee—Milwaukee Gas Specialty Co., 2017 Clybourn St., 1 story and basement, 45 x 115 ft., addition to factory, brick and concrete, plain foundation, to H. Danischefsky, 1484 Humboldt Ave. $45,000. Noted Nov. 30.

Calif., San Jose—De-Hi Food Products Co. will build dehydrating plant, on 5 acre site, Union Ave., here, by day labor. A. P. Marston, of California Prune and Apricot Growers Co., San Antonio and Market Sts., pres. Architect not selected.

Ont., Ford—Ford Motor Co. of Canada, first unit of rein.-con., brick and steel plant here, general contract to Wells & Gray, Confederation Life Bldg., Toronto; steel to Canadian Bridge Co., Walkerville. Total est. $1,000,000. Noted Nov. 30.

Buildings

PROPOSED WORK

N. H., Keene— Theater — D. Latchis, Brattleboro, Vt., plans 2 story, brick, here. $150,000.

Mass., Holyoke — Clubhouse — Aerie of Eagles, c/o D. Mullen, 142 Elm St., plans 3 story. $300,000. Architect not selected.

Mass., Holyoke—Y.M.C.A., 367 High St., plans 4 or 5 story, brick, plain foundation, Appleton St. $200,000-$300,000.

Mass., Northampton — Gymnasium — Smith College having sketches made by J. W. Ames and E. S. Dodge, archts., 15 Exchange St., Boston, 2 story. $300,000.

Mass., Northampton—Music Hall—Smith College having plans prepared by Delano & Aldrich, archts., 126 East 38th St., New York City, music hall. $400,000.

Mass., Springfield—Apartment—N. Nirenstein, 387 Main St., plans 4 story, Maple St. $300,000.

Mass., Springfield—Office—L. W. Besse, 21 Besse Pl., having plans prepared by Brown & Von Beren, archts., Church St., New Haven, Conn., 6 story, 70 x 112 ft., brick, plain foundation. $250,000.

Mass., Springfield—Station—Boston & Albany R.R., South Station, Boston, plans railroad station, Liberty St., here. $4,000,000.

R. I., Providence—Office—Providence Gas Co., Turks Head Bldg., plans large office building, Weybosset and Orange Sts. Architect not selected.

Conn., Bridgeport—Church—St. Stephens Roman Catholic Church, 330 Spruce St., plans 1 story and basement, stone or brick, Fairfield Ave. and Bird St. $200,000. S. F. Chernitzky, pastor. Architect not selected.

N. Y., Brooklyn—School—Bd. Educ., 500 Park Ave., New York, having plans prepared by C. B. Snyder, archt. and engr., Flatbush Ave. extension and Concord St., P. S. 203, brick, steel and stone, plain foundation Ave. M. and East 51st St., here. $600,000.

N. Y., Glenmorris (Jamaica P. O.) — School—Bd. Educ., 500 Park Ave., New York City, having plans prepared by C. B. J. Snyder, archt. and engr., Flatbush Ave. extension and Concord St., Brooklyn, P. S. 121, brick, steel and stone, plain foundation, Shuwanee Ave., here. $500,000.

N. Y., New York — High School — Bd. Educ., 500 Park Ave., soon receives bids George Washington High School, 4 story, 246 x 376 ft., brick, steel and stone, 535-589 Audubon Ave., $2,240,000. C. B. J. Snyder, Flatbush Ave. Extension and Concord St., Brooklyn, archt. and engr.

N. J., Newark—Temple—Salaam Temple A.A.O.N.M.S., 1020 Broad St., rejected bids brick and stone, plain foundation, Broad St. $1,000,000. Will readvertise. F. Grad, 245 Springfield Ave., archt. Noted Dec. 22.

Pa., Harrisburg—Bank—Keystone Bank of Harrisburg, 3rd and Calder Sts., plans 3 story and basement, 110 x 120 ft., brick, steel and stone, 3rd St. $200,000.

Pa., Jersey Shore—High School—Bd. Educ. plans 2 story, brick. $150,000. Architect not announced.

Pa., Kingston—High School—Bd. Educ. plans new brick high school, Wyoming Ave. $200,000. Architect not selected.

Pa., Phila.—Apartment—Stetler & Deysher, archts., 1484 North 52nd St., soon take bids 3 story and basement, 92 x 117 ft. brick, steel and stone, plain foundation, 48th and Walnut Sts. $200,000. Owner's name withheld.

Pa., Phila. — Chapel — Phila. Divinity School, 42nd and Locust Sts., soon takes bids 1 story and basement, rein.-con., brick, steel and stone, plain foundation, 42nd and Locust Sts. $250,000. M. B. Medary, Otis Bldg., archt.

Pa., Phila.—Synagogue—H. H. Kline, archt., Bulletin Bldg., soon takes bids 3 story and basement, 80x95 ft. brick, steel and stone, plain foundation, Hutchinson and Warrnock Sts. $150,000. Owner's name withheld.

Pa., Pittsburgh—High School—Bd. Educ. having plans prepared by W. G. Eckles, archt., New Castle, brick school with 24 class rooms, gymnasium and auditorium, 10th and Pennsylvania Aves. $325,000.

Md., Baltimore—Club—City Club having plans prepared by C. N. and N. Friz, archts., Lexington Bldg., 6 story, ornamental terra cotta and fireproof construction, Saratoga and St. Paul Sts. $500,000. H. F. Doelman, 507 North Charles St., consult. structural engr.

Md., Baltimore — Lodge — Knights of Pythias, 129 North Gay St., having plans prepared by C. N. and N. Friz, archts., Lexington Bldg., 4 story, brick and stone, Charleston and Preston Sts. $600,000. J. M. Hendricks, secy.

W. Va., Morgantown—Hotel—Morgantown Hotel Co., plans hotel, High and Chestnut Sts. $500,000. J. H. Poling, pres. Architect not selected.

N. C., Burlington—School—Jan. 9, to vote on $150,000 bonds for schools.

N. C., Raleigh—Hotel—G. L. Preacher & Co., archts., Raleigh, and Healy Bldg., Atlanta, Ga., preparing plans 8 story and basement, stone, brick and terra cotta, West Martin St. $250,000. Owner's name withheld.

Fla., Frostproof — Station—See "Railways."

Miss., Jackson—Office—Lamar Life Insurance Co. plans 15 story, North Congress St. $750,000. Architect not selected.

Miss., Vicksburg — Schools — Plans 2 schools, brick, plain and concrete pile foundations, Cherry St. $425,000 bonds sold. Architect not selected.

Ky., Frankfort—High School—Plan to vote on $150,000 bonds in January, for high school. A. L. Gordon, member city council.

Ky., Louisville—Home—B. P. O. E. had plans prepared by Joseph & Joseph, archts., Francis Bldg., 8 story and basement, 3rd and Chestnut Sts. $1,000,000.

Ky., Louisville—Station and Office—Louisville Ry. Co., Traction Bldg., plans 2 or 3 story, 200 x 500 ft. J. P. Barnes, pres.

O., Cleveland—Dormitory—Y.W.C.A., c/o A. Ewart, secy., 3105 Franklin Ave., plans 3 story, brick, steel and concrete, Franklin Ave. $200,000. Hubbell & Benes, 4500 Euclid Ave., archts.

O., Cleveland—High School—Bd. Educ. of Mayfield School Dist., c/o G. Gilmore, clk., Chagrin Falls, plans 3 story, brick, steel and concrete, near here. $225,000. Fulton, Taylor & Cahill, 8120 Euclid Ave., Cleveland, archts.

O., Cleveland—Hotel—Ledge Lawn Manor Co., c/o T. Perrin, vice-pres., Cleveland Discount Bldg., plans 2 story, brick and timber hotel, riding academy and golf course, Richfield and Peninsula Rds. $300,000. Architect not selected.

O., Dayton — Office — United Brethren Church, rejected bids opened Dec. 1, 14 story, 60 x 128 ft., and 7 story addition to adjoining structure, rein.-con., tile and brick, 4th and Main Sts. $850,000. Will readvertise. Noted Nov. 30.

O., East Cleveland (Cleveland P. O.)—School—Bd. Educ. plans 3 story, 40 room, brick, steel and concrete, Euclid and Grasmere Aves. $800,000. Architect not selected.

O., Greenville—High School—Bd. Educ. having plans prepared by W. B. Ittner, archt., 911 Locust St., St. Louis, Mo., 3 story, about 150 x 175 ft., rein.-con. and brick, plain foundation. $500,000.

O., Lakewood (Cleveland P. O.)—Apartment—I. Lerman and F. Libman, 3219 East 117th St., Cleveland, having plans prepared by Branerman & Havermaet, archts., 801 Ulmer Bldg., Cleveland, 3 story and basement, 102 x 160 ft., brick and timber, plain foundation, Clifton Blvd., near Cove Ave. $200,000.

Ind., Gary—Store and Office—Minas Furniture Co., 158 State St., Hammond, having plans prepared by W. E. Berry, archt., 212 East Superior St., Chicago, 3 story and basement, 50 x 150 ft., brick, Bway. $160,000.

Ind., Greensburg — Dormitory — I.O.O.F. Lodge of Indiana, Odd Fellows Bldg., Indianapolis, plans 3 story and basement, brick, here. $150,000. C. Brossman, Merchants Bank Bldg., Indianapolis, archt.

Ind., Hammond—Hotel—Hammond Hotel & Improvement Corp., c/o Crane & Franzheim, archts., 127 North Dearborn St., Chicago, having plans prepared 4 story, rein.-con. and brick. $500,000. Noted Oct. 12.

Ind., Huntington—Hotel—J. F. Bippus, 841 North Jefferson St., plans 8 story and basement, 133 x 146 ft., brick and steel. $500,000. Private plans.

Ind., Indianapolis — Apartment — Chadwick Realty Co., 420 Merchants Bank Bldg., plans 3 story and basement, 70 x 205 ft., brick and stone, 1105 North Pennsylvania St. $200,000. Architect not selected.

Ind., Indianapolis—Community—Christamore Settlement Assn., 901 King Ave., plans 2 story and basement, West Michigan St. $150,000. W. E. Russ, Meridian Life Bldg., archt.

Ind., Marion — High School—Bd. Educ. having revised plans prepared by H. G. Bowstead, archt., 2 story and basement, 140 x 220 ft., brick, 36th St. $300,000. Noted July 27.

Ind., Terre Haute—High School—Bd. Educ. had revised plans prepared by Johnson, Miller & Miller, archts., 30 North 5th St., 2 story and basement, 220 x 400 ft., rein.-con. and brick, concrete pile foundation, 25th St. $700,000. Warren & Lewis, Realty Bldg., Louisville, Ky., engrs. Noted Oct. 19.

Mich., Albion — Dormitory, Gymnasium, etc. — Albion College, having preliminary plans prepared by H. K. Ferguson, archt., 6523 Euclid Ave., Cleveland, O., 3 story and basement, rein.-con. dormitory, plain foundation, $150,000; 1 and 2 story and basement, gymnasium and central heating plant, rein.-con. and brick, plain foundation, $250,000.

Mich., Albion—Hospital—J. W. Sheldon Memorial Assn., 316 East Porter St., having plans prepared by A. Wood, archt., 3513 Woodward Ave., Detroit 4 story and basement, 90 x 100 ft. rein.-con., plain foundation, South Superior St. $150,000.

Mich., Detroit—Apartment—P. R. Rossello, archt., 406 Congress Bldg., preparing plans 3 story and basement, 110 x 140 ft. brick and steel, plain foundation, Cass Ave. $225,000. Owner's name withheld.

Mich., Detroit—Apartment—J. I. Weinberg, archt., 401 Congress Bldg., preparing plans 4 story and basement, 40 ft. high, 42 x 170 ft., rein.-con., brick and steel, plain foundation, Peterboro St. $200,000. Owner's name withheld.

Mich., Detroit—Bank and Office—First State Bank & Security Trust Co., Griswold St., plans 4 story and basement, 74 x 130 ft. rein.-con., brick and steel, Griswold and Lafayette Sts. $500,000. Architect not selected.

Mich., Detroit — Church — West Grand Blvd., Methodist Episcopal Church, West Grand Blvd. and 12th St., having plans prepared by W. E. N. Hunter, archt., 1436 Washington Blvd., 2 story and basement, brick, steel and stone, plain foundation, West Grand Blvd. and 12th St. $200,000.

Buildings (Continued)

Mich., Detroit—Community—West Grand Blvd. Methodist Episcopal Church, West Grand Blvd. and 12th St., having plans prepared by W. E. N. Hunter, archt., 1436 Washington Blvd., 5 story, 80 x 100 ft. concrete, brick and steel, plain foundation, 12th St. $150,000.

Mich., Detroit—School—Bd. Educ. having plans prepared by Malcomson, Higginbotham & Palmer, archts., 405 Moffat Bldg., 2 story and basement, 110x145 ft. rein.-con., brick and steel, plain foundation. Kirby Ave. $150,000.

Mich., East Lansing—College—Michigan Agricultural College, had sketches made by Pond & Pond, archts., 64 East Van Buren Ave., Chicago, and takes bids early in spring, 3 story and basement, 115 x 125 ft. rein.-con. and brick, plain foundation, Grand River Ave. $400,000.

Mich., East Lansing—Horticultural—E. Bowd, archt., 127 West Allegan St., Lansing, preparing plans and takes bids in spring, 3 story and basement, 40x185 ft. rein.-con. and stone, plain foundation, here, for Michigan Agricultural College. $400,000.

Mich., Jackson—Prison—Michigan State Prison having preliminary plans prepared by Smith, Hinchman & Grylls, archts., 809 Marquette Bldg., Detroit, complete new prison, may be built in units at North Farm. $5,000,000.

Mich., Lansing—Hotel—Lansing Hotel Corp., Lansing, having plans prepared by W. S. Holmes Co., archts., Tussing Bldg., 11 story and 2 basements, 110 x 132 ft. rein.-con. and brick, Michigan Ave. $1,000,000.

Mich., Lansing—Temple—E. A. Bowd, archt., 127 West Allegan St., takes bids early in spring, 5 story and basement, 70 x 140 ft. rein.-con. and brick, for Masonic Assn., c/o E. Gibbs, American State Savings Bank. $400,000.

Ill., Chicago—Apartment—A. Lindstrom, c/o C. W. Westerlind, archt., 179 West Washington St., plans 3 story and basement, rein.-con., brick and steel, 4520 Drexel Blvd. $500,000.

Ill., Chicago—Apartment—J. Rosenberg c/o Rissman & Hirschfeld, archts., 139 North Clark St., having plans prepared three 3 story and basement, 125 x 169 ft., rein.-con., brick and steel, Everrett and 55th Sts. $1,500,000.

Ill., Chicago—Apartment—Yates Building Corp. c/o Leichenko & Esser, archts., 38 South Dearborn St., soon lets contract 4 story, 200 x 250 ft., rein.-con., brick and steel, Yates St., between 71st and 72nd Sts. $600,000.

Ill., Chicago—Church—St. Gregory Roman Catholic Congregation, 1634 Gregory St., having plans prepared by Comes, Perry & McMullen, archts., Renshaw Bldg., Pittsburgh, Pa., 1 story and basement, 60 x 150 ft., brick and stone. $150,000.

Ill., Chicago—Office—C. A. Eckstrom, archt., 5 North La Salle St., preparing plans 4 story, 62 x 197 ft., rein.-con., brick and steel addition to Garland Bldg., Wabash Ave. and Washington St. $500,000. Owner's name withheld.

Ill., Chicago—Hotel—Fullerton Plaza Hotel Co., 508 Fullerton Parkway, having plans prepared by Olsen & Urbain, archts., 155 North Clark St., 5 story, 96 x 179 ft., rein.-con., brick and steel addition. $350,000.

Ill., Chicago—Hotel—Lincoln Square Hotel Co., c/o Olsen & Urbain, archts., 155 North Clark St., having plans prepared 4 story, 130 x 175 ft., rein.-con., brick and steel, 525-29 Arlington Pl. $500,000.

Ill., Chicago—Store and Office—I. M. Mills, c/o Ludgin & Leviton, archts., 53 West Jackson Blvd., plans 2 story and basement, 100 x 120 ft., rein.-con., brick and steel, 6922-28 South Haisted St. $175,000.

Wis., Appleton — Temple — Appleton Masonic Temple Assn., c/o G. Buchanan, pres., 817 College Ave., having plans prepared by Leenhouts & Guthrie, archts., 424 Jefferson St., Milwaukee, 2 story and basement, brick or stone. $150,000.

Wis., Madison—Hotel—Piper Bros. Co., 31 North Pinckney St., having plans prepared by Baech & Lippert, archts., Gay Bldg., 10 story, 101 x 164 ft., brick rein.-con. and steel, plain foundation, Mifflin St. $850,000.

Wis., Madison—Store—Kessenichs Co., c/o F. Kessinick, mgr., 26 North Carroll St., plans 2 or 4 story, 60 x 155 ft., brick, rein.-con. and steel, plain foundation. $150,-000. Architect not selected.

Wis., Madison—Store—Apartment—R. A. Phillips, archt., 315 Beaver Bldg., preparing plans 4 story, 75 x 190 ft., brick, rein.-con. and steel, plain foundation. $150,000. Owners name withheld.

Wis., Milwaukee — Apartment — H. C. Schwartz, 482 Van Buren St., having plans prepared by H. G. Lotter, archt., 427 Milwaukee St., 3 story and basement, 46 x 110 ft., brick, plain concrete foundation, Cass St. $150,000.

Wis., Milwaukee—Church—St. Catherines Congregation, plans, c/o R. L. Kuhn, chn. building com., 548 12th St., 1 story and basement, brick and tile, plain foundation, Center St. $150,000.

Wis., Milwaukee—Club House, etc.—Blue Mound Country Club, c/o G. F. Gregg, secy., 437 East Water St., plans brick and tile, or ordinary construction club house, incl. golf links, Kilbourn and Loomis Rds. $250,000. Architect not selected.

Wis., Milwaukee—Club House and Commercial—Milwaukee Eagles, Aerie No. 137, Plankinton Arcade, plans brick and concrete, plain foundation, to replace one recently destroyed by fire. $150,000-$200,000. Architect not selected.

Wis., Mineral Point — High School — Bd. Educ. having plans prepared by E. Tough, archt., Conklin Bldg., Madison, 2 story, 80 x 110 ft., brick, rein.-con. and steel, plain foundation. $150,000.

Wis., Racine—Store—Lodge—Columbus Bldg. Assn., 1600 Racine St., having plans prepared by Racine Constr. Co., archts., 468 College Ave., 3 story, 60 x 114 ft., brick, rein.-con. and steel, plain foundation. $150,000.

Wis., Rice Lake—High School—Bd. Educ. having plans prepared by E. J. Hancock, archt., Eau Claire, 2 story, 75 x 195 ft., high and vocational school, brick, rein.-con. and steel, plain foundation. $150,000.

Wis., Verona—Asylum—Dane Co., Court House, Madison, plans 4 story, 100 x 140 ft., asylum, incl. cold storage plant, brick, rein.-con. and steel, plain foundation. $150,000. M. Sommers, chn. Architect not selected.

Kan., Kansas City—Office and Store—H. and F. Jennings, 754 Minnesota Ave., plans 2 story and basement, rein.-con. and brick. $150,000. Architect not selected.

Kan., Manhattan — Church — Methodist Church Congregation takes bids about Jan. 15, 2 story and basement, 60 x 120 ft., brick and stone. $200,000. T. W. Williamson & Co., 312 Central Natl. Bank Bldg., Topeka, archts.

Kan., Pittsburgh — Temple — Shrine Mosque having plans prepared by J. W. Williams & Co., archts., 312 Central Natl. Bank Bldg., Topeka, 4 story and basement, 140 x 140 ft., rein.-con. and brick. $300,000.

Kan., Topeka—Office—Kansas Life Insurance Co., 701 Jackson St., takes bids about Jan. 15, 4 story and basement, 50 x 120 ft., rein.-con. and brick. $150,000. T. W. Williamson & Co., 312 Central Bank Bldg., archts.

Neb., Falls City—Courthouse—Richardson Co. having plans prepared by W. F. Gernandt, archt., 634 Keeline Bldg., Omaha, 3 story. $200,000.

Mo., St. Louis—School—Bd. Educ., 911 Locust St., having preliminary plans prepared by A. Milligan, archt. and engr., 911 Locust St., 3 story, 12 room, ultimately 24 room school for colored, rein.-con. and brick, plain foundation, 23rd and Walnut Sts. $200,000.

Tex., Dallas — Club — Dallas Lodge 44, I. O. O. F., 1821 Young St., having preliminary plans prepared and takes bids early in 1923, club at Cabell and Pearl Sts. $150,-000. S. S. Cochran, chn.

Tex., Dallas—College—St. Marys College, Garrett and Ross Aves., making plans college. $200,000. Architect not announced.

Tex., Dallas—Hotel—H. S. Green, archt., Alamo Bank Bldg., San Antonio, takes bids early in 1923, 14 story and basement, 75 x 200 ft., steel, brick and tile, plain foundation, for C. L. Sanger, 2429 South Blvd. and associates. $400,000.

Tex., Dallas — Market — City having sketches made by C. D. Hill & Co., archts. and engrs., Sumpter Bldg., 2 story and basement, 200 x 200 ft. Election in April to vote on $500,000 bonds.

Tex., Ft. Worth—Club—Ft. Worth Club, 106 West 6th St., plans club, about 12 story, at Throckmorten and 7th Sts. $1,-500,000. Engineer not selected.

Tex., Houston — Library — City Comn. takes bids early in 1923 for library. $200,-000. W. A. Dowdy, City Hall, archt. and engr.

Tex., Lubbock—Church—First Baptist Church had preliminary plans prepared church. $150,000. Address Chairman building com. Architect not selected.

Tex., Port Arthur — Grade School — Bd. Educ. having plans prepared by W. B. Ittner, archt., 911 Locust St., St. Louis, Mo., 2 story, 80 x 232 ft., rein.-con. and brick, plain foundation, to contain gymnasium, auditorium, manual training shops, etc., De Queen Blvd. $150,000.

Tex., Port Arthur — High School — Bd. Educ. having preliminary plans prepared by W. B. Ittner, archt., 911 Locust St., St. Louis, and takes bids about Jan. 15, two 2 story, 145 x 160 ft. wings, brick, steel and tile, concrete foundations, one 2 story Manual Training School other to Commercial High School, $200,000 each, also 1 story 30 x 65 ft. boiler house, concrete stacks, etc., $100,000.

Okla., Okmulgee—Community—Election soon to vote on $175,000 bonds 2 story and basement, 120 x 140 ft., rein.-con. brick and terra cotta, North Alabama Ave. Architect not selected.

Okla., Tulsa—Bank and Office—Central Natl. Bank, 2nd and Boston Sts., having plans prepared by H. H. Mahler Co., archts., 231 Lynch Bldg., 15 story and basement, 50 x 140 ft., rein.-con., brick and terra cotta, 2nd and Boston Sts. $1,000,000.

Wash., Centralia—Hotel—Company being formed to build hotel. $200,000. J. Agnew Chn. Address Secretary of Commercial Club.

Calif., Alameda—Temple—Masonic Temple Assn., c/o C. Werner, archt., Santa Fe Bldg., San Francisco, had plans prepared 2 story, rein.-con., Alameda and Park Sts. $150,000.

Calif., Bakersfield—Hotel and Store—T. J. Coleman, mgr. St. Francis Hotel, San Francisco, interested in company being organized to construct 6 story, 19th and I Sts. $500,000. Architect not selected.

Calif., Berkeley — Office — Physicians Bldg., Inc., c/o McWethy & Greenleaf, archts., 505 17th St., Oakland, take bids in January, 4 story, concrete, Channing Way. $150,000.

Calif., Oakland—Administration—Alameda Co. having plans prepared by H. H. Meyers, archt., Kohl Bldg., San Francisco, 2 story, rein.-con. and terra cotta, 14th Ave. and East 27th St. To exceed $150,000.

Calif., Sacramento—Schools—City had plans prepared by E. A. Mathews and H. Simpson, archts., Call Bldg., San Francisco, and takes bids in January, eight 1 and 2 story, brick, steel, concrete and terra cotta buildings, 34th, 35th, U and V Sts. $540,000.

Calif., Oakland — Store — Whitthorne & Swan, 1015 Washington St., had plans prepared by W. Knowles, archt., Hearst Bldg., San Francisco, and Central Bank Bldg., Oakland, 1 and 3 story and basement, rein.-con., Washington and 10th Sts.

Calif., San Francisco—Theatre—A. S. and J. L. Levin, c/o Reid Bros., archts., 165 Montgomery St., having plans prepared theatre, 2,000 seating capacity, Geary St. and 18th Ave. $250,000.

Calif., Santa Barbara—Hotel—Recreation Center had sketches made by J. Morgan, archt., Merchants Exch. Bldg., San Francisco, 3 story, brick, Anacapa and Carrio Sts. $150,000.

Que., Hull—Schools—Catholic School Bd. takes bids in spring, new schools. $300,000. Architect not selected.

Que., Montreal—University—McGill University, Sherbrooke St. W., plan 3 story 92x242 ft. addition, University St. $328,000. A. Currie, principal.

Ont., London—City Hall—A. M. Piper, building inspector, City Hall, preparing plans and takes bids about March 1, for new city hall, nornamental brick and stone. $300,000.

Ont., Meaford—School—Bd. Educ. plans 2 story and basement, 45 ft. high, 8 room, concrete, brick and steel addition. $150,-000. Architect not selected.

Ont., Pembroke—School—Bd. Educ. having plans prepared by W. C. Keighley, archt., 156 Pembroke St., E., 2 story and basement, 8 room, concrete, brick, steel and stone. $150,000.

Ont., Sandwich—School—Bd. Educ. takes bids in January new school. $266,000. E. R. North, town clk.

Ont., Toronto—School—Separate School Bd., 477 Jarvis St., had plans prepared by J. P. Hynes, archt., 73 King St. W., 2 story and basement, 44 ft. high, 12 rooms, concrete, brick and steel, Dawson St. $200,000.

Ont., Toronto—Schools—Bd. Educ., 155 College St., plans new schools and additions to old ones, mostly 2 slory and basement, concrete, brick and steel, in various sections of city. $1,000,000. W. W. Pearse, 155 College St., archt.

Ont., Toronto—School—Separate School Bd., 477 Jarvis St., having plans prepared by J. M. Cowan, archt., 107 Vincent St., 2 story and basement, 8 room, concrete, brick, stone and tile addition. $150,000.

Ont., Toronto—School—York Twp. School Bd., Sect. 30, having plans prepared by Gordon & Helliwell, archts., Confederation Life Bldg., 2 story and basement, 8 room, concrete, brick and steel. $150,000.

Buildings (Continued)

BIDS DESIRED

N. Y., Brooklyn — Apartment — J. A. Mears Inc., 342 Madison Ave., New York City, will build 6 story, 102 x 125 ft., brick, steel and stone, plain foundation, 8th Ave. and Court St., by separate contracts, $160,000. Slee & Bryson, 154 Montague St., archts. and engrs.

N. Y., New York—Loft—Gilbur Corp., Inc., 205 West 37th St., will build 17 story, 98 x 244 ft., 37th St and 7th Ave., by separate contracts. $1,500,000. A. Quinn, pres. Contract for steel, let to Levering & Garrigues Co., 552 West 23rd St. Buchman & Kahn, 56 West 45th St., archts. and engrs.

Md., Baltimore—Church—Jan. 3, by J. C. Heller, 507 Linwood Ave., chn. of building Com., Church of Our Savior, 2 story, brick and stone, 33rd and Taylor Sts. J. A. Dempwolf, Centre Sq., York, Pa., archt.

Md., Baltimore — Engine Houses and Truck Houses—Jan. 3, by City, engine house No. 59, Maryland and Indiana Aves., Westport, C. F. Strohmeyer, archt.; No. 57, Harford Rd. and Fleetwood St., Hamilton, W. H. Emory, Jr., Munsey Bldg., archt.; No. 58, Pennington Ave. and Filbert St., F. H. Thomas, 135 West Kenwood St., archt.; No. 47, Washington Blvd. and 8th St., R. W. Greer, 18 West Saratoga St., archt.; No. 25, R. L. Harris, 13 West Saratoga St., archt.; Engine house No. 55 and truck house 23, 28th St. between Oak and Maryland Aves., W. F. Stone, Jr., Maryland Casualty Tower, archt.; engine house No. 56 and truck house No. 24, Bush and Carroll Sts., W. F. Stone, Jr., Maryland Casualty Tower, archt.; all foregoing brick and rein.-con. Bids will be taken on each individually; also lump sum for five engine houses, and lump sum on two groups of engine and truck houses.

Md., Baltimore—High School—Jan. 10, by Mayor and City Council, 3 story, concrete, steel and brick, Hawthorne Rd. and Clarendon Ave. $1,250,000. Parker, Thomas & Rice, Union Trust Bldg., archts. H. Adams, Calvert Bldg., and H. Massart, 324 North Charles St., engrs.

Tex., Houston—Bank—First Natl. Bank, 201 Main St., receiving bids 12 story and basement, 90 x 100 ft., Franklin Ave. $750,000. Sagnuinett, Staats & Gotlieb, Carter Bldg., archts. and engrs.

Calif., Hollywood—Hospital—R. H. Orr, archt., Van Nuys Bldg., Los Angeles, receiving bids 5 story, 40 x 199 ft., with 40 x 60 ft. wing, rein.-con., Vermont Ave., for Hollywood Hospital Assn. $300,000.

Calif., San Francisco—Market and Apartment—W. C. Falch, archt., Hearst Bldg., receiving bids 6 story, rein.-con., Market St. near Gough St., for J. B. Gaffney and R. A. Luce, 1031 Market St. $200,000. A. A. Coddington, Phelan Bldg., mechanical engr. P. Zucco, 166 Geary St., structural engr.

BIDS RECEIVED

N. Y., Binghamton — School — Bd. Educ. opened bids general contract 2 story and basement, 157 x 178 ft., brick, 1st Ward, from D. Kirkpatrick and F. Stento, Binghamton $329,700, Shane Constr. Co., Herald Bldg., Syracuse, $371,382, Felton Constr. Co., Buffalo, $364,369; heating and ventilating, from Johnson Heating Co., New York City, $48,300, Power Efficiency Corp., White Bldg., Buffalo, $55,490; E. G. Woolfolk & Co., Newark, N. J., $49,687. Noted Nov. 23.

CONTRACTS AWARDED

Mass., Springfield—Apartment—W. Zimmerman, 19 Glendell Terrace, will build 4 story, 116 x 180 ft., brick, plain foundation, Bowdin Terrace, by day labor. $175,000. J. W. Foster, 46 Narragansett St., archt.

N. Y., Brooklyn—Apartment—L. Halperin Improvement Co., c/o Cohn Bros., archts. and engrs., 361 Stone Ave., will build 4 story, 100 x 100 ft., brick, steel and stone, plain foundation, Buffalo Ave. and Lincoln Pl., by day labor.

N. Y., Brooklyn—Apartment—S. H. Cutting, c/o Shampon & Shampon, archts. and engrs., 188 Montague St., will build 4 story, 100 x 120 ft., brick, steel and stone, plain foundation, Schenectady Ave., by day labor. $200,000.

N. Y., Brooklyn—Apartment—Grolley Bldg. Corp., c/o C. Schafer, Jr., archt. and engr., 394 East 150th St., New York City, will build 6 story, 100 x 140 ft., brick, steel and stone, plain foundation, Grand Concourse and 173rd St., by day labor. $175,000.

N. Y., Brooklyn—Apartment—Sayetta Realty Corp., c/o McCarthy & Kelly, archts. and engrs., 159 Remsen St., will build 6 story, brick, steel and stone, plain foundation, Ocean Ave., by day labor. $225,000.

N. Y., Brooklyn—Apartment—C. and K. Constr. Co., c/o Shampan & Shampan, archts. and engrs., 50 Court St., 6 story, 135 x 210 ft., brick, steel and stone, plain foundation, Ocean Ave. near Church Ave., by day labor. $750,000.

N. Y., New York—Apartment—Five Hundred Eighty Park Ave. Corp., c/o J. E. R. Carpenter, archt. and engr., 598 Madison Ave., 14 story, 75 x 200 ft., brick, steel and stone, plain foundation, 63rd St. and Park Ave., to Dwight P. Robinson & Co., Inc., 125 East 46th St. Archts. est. $3,000,000.

N. Y., New York—Apartment—Hillpin Building Corp., 3420 3rd Ave., 5 story, 15 x 78 ft., brick, steel and stone, plain foundation, Decatur Ave., by day labor. $175,000. J. M. Felson, 1133 Bway., archt. and engr.

N. Y., New York—Apartment—F. McNulty, c/o C. Schafer, Jr., archt. and engr., 394 150th St., will build 5 story, 100 x 100 ft., brick, steel and stone, plain foundation, West 206th St., by day labor. $150,000.

N. Y., New York—Apartment—L. Wolf, c/o Margon & Glaser, archts. and engrs., 2806 3rd Ave., will build 5 story, 80 x 100 ft., brick, steel and stone, plain foundation, University Ave., by day labor. $200,000.

N. Y., New York—Apartment—H. Glick, c/o D. S. Lang, archt. and engr., 110 West 34th St., will build 5 story, 100 x 100 ft., brick, steel and stone, plain foundation, 188th St. and Audubon Ave., by day labor. $250,000.

N. Y., New York — Apartment Morris Ave. Building Corp., c/o Margon & Glaser, archts. and engrs., 2806 3rd Ave., will build brick, steel and stone, plain foundation, Morris Ave., by day labor. $200,000.

N. Y., New York—Hotel I. Feldman, c/o C. B. Meyers, archt. and engr., 31 Union Sq., will build 15 story, 40 x 220 ft., brick, steel and stone, plain foundation, 100th St. and Bway., by day labor.

Pa., Grove City—Hotel—Owsley Co., archts., 1301 Mahoning Bank Bldg., Youngstown, O., 5 story, 89 ft. front, concrete, brick and steel, to Parish Bros., 217 Wick Ave., Youngstown, O., for Grove City Hotel Co., Grove City. Archts. est. $200,000. Noted Nov. 30.

Md., Baltimore — Office — Federal Land Bank, 1 story and mezzanine, stone, St. Paul and 24th Sts., to M. A. Long Co., Guilford Ave. and Fayette St. Archts. est. $150,000.

D. C., Wash.—High Schools—Dist. Comn., 509 Dist. Bldg., for MacFarland and Langley Junior High Schools, to M. Serretto, Main Treas. Bldg., $592,000. Noted Dec. 21.

N. C., Greensboro—School—Bd. Educ., general contract for school, Cedar St., to Palmer-Spivey Constr. Co., Campbell Bldg., Augusta, Ga., $129,450.

Miss., Jackson — Auditorium — General contract for 2 story, 160 x 160 ft., brick and steel, rein.-con. foundation, to I. C. Garber, Jackson, $120,000. Archts. est. $158,000.

O., McComb—Grade and High School—Bd. Educ. 2 story and basement, 114 x 182 ft., brick, rein.-con. and steel, from J. I. Barnes, South Bend, Ind., $222,254; Wood Constr. Co., 427 Holland Bldg., Lima, $226,619; O. M. Green, 325½ North Elizabeth St., Lima, $229,842. Noted Nov. 30.

Ind., Laporte—High School—Bd. Educ., 2 story and basement, 165 x 198 ft., rein.-con. and brick, concrete pile foundation, to Lanson & Danielson Constr. Co., Laporte. Archts. est. $400,000. Noted Oct. 19.

Ind., South Bend—Apartment—T. P. Moredock, 315 West Colfax St., 3 story and basement, 87 x 97 ft., Colfax St., to R. Goilitt & Sons, 30 North La Salle St., Chicago. Archts. est. $200,000.

Mich., Lansing—Hospital—St. Lawrence Hospital Assn., 101 Willow St., 4 story and basement, 131 x 183 ft. rein.-con. and brick, to Reniger Constr. Co., 336½ East Michigan Ave., $400,000.

Wis., Milwaukee—Apartment—J. Hunholz, 2310 Vliet St., 6 story and basement, 53 x 104 ft., brick and rein.-con., plain concrete foundation, on Biddle St., to Cutter Constr. Co., 886 46th St. Archts. est. $150,000. Noted Dec. 14.

Wis., Racine—Hotel—New Racine Hotel Co., c/o C. Fowler, secy., Badger Bldg., 8 story, 104 x 240 ft., brick and tile, plain concrete foundation, to Starrett Bros., 8 South Dearborn St., Chicago. Archts, est. $2,400,000. Noted Dec. 21.

Ia., Dubuque—Apartment-Hotel—Cooper Estate will build 4 story and basement, 114 x 129 ft., rein.-con., brick, tile and stone, 2nd and Locust Sts., by day labor. $150,000 J. F. Leitha, Dubuque, archt.

Tex., Amarillo — Hospital — Potter Co., general contract hospital, tubercular cottage and nurses home, to V. E. Ware, El Paso, $145,000. Archts. est. $250,000. Noted Nov. 30.

Tex., Memphis—Courthouse—Hall Co., general contract 2 story, 72 x 106 ft., rein.-and brick, to Walker Constr. Co., Houston Bldg., San Antonio, $121,520. Noted Nov. 23.

Colo., Denver — Administration — Bd. Educ. general contract 2½ story and basement, 115 x 140 ft., 14th and Laramer Sts., to F. J. Kirchoff Constr. Co., 718 Lawrence Bldg., $143,520. Archts. est. $169,000.

Calif., Arrowhead—Hotel and Store—Swasey & McAfee, archts., Hibernian Bldg., Los Angeles, 3 story and basement, to Atwood Constr. Co., San Bernardino, $240,000. Owner's name withheld.

Calif., Los Angeles—Apartment—Lange & Bergstrom, Washington Bldg., will build 8 story, Park View St., by day labor. $650,000. Walker & Eisen, Pacific Finance Bldg., archts.

Calif., Los Angeles—Cathedral and Parish House—St. Pauls Cathedral, constructing brick and steel, Figueroa St. near Orange

ROAD WORK—ORANGE, TEX.

Bids were opened Nov. 13, by Orange Co., for constructing 11 road projects, (A) F. P. McElwrath, Corsicana, (awarded contract); (B) C. K. Horton, Houston; (C) Houston Constr. Co., Houston. The unit bids were as follows:

	A	B	C
2 acres clearing (light)	$50.00	$50.00	$40.00
2 acres clearing (heavy)	100.00	100.00	100.00
21.91 mi. road grader work	225.00	50.00	200.00
29,915 cu.yd. roadway excavation	.32	.40	.30
9,000 cu.yd. roadway excavation	.35	.40	.30
10,100 cu.yd. borrow excavation	.35	.35	.30
80 cu.yd. borrow excavation	.35	.35	1.00
1,000 cu.yd. borrow excavation	.32	.35	.25
1,600 cu.yd. borrow excavation	.40	.35	.30
28.546 mi. shaping roadbed	75.00	50.00	75.00
160,863 sq.yd. earth shoulders	.03	.01	.03
21,120 sq.yd. concrete pavement	2.50	2.70	2.82
32,728 sq.yd. concrete pavement	2.50	2.60	2.82
53,848 sq.yd. reinforcing mesh	.20	.12	.14
2,224 lin.ft. oak headers 3 in. x 8 in.	.25	.20	.40
352 lin.ft. oak headers 3 in. x 8 in.	.25	.30	.40
168 lin.ft. vitrified drain tile, 12 in.	2.00	1.50	1.50
48 lin.ft. vitrified drain tile, 12 in.	2.50	1.50	1.50
144 lin.ft. vitrified drain tile, 15 in.	2.50	2.00	3.00
144 lin.ft. vitrified drain tile, 18 in.	3.00	3.00	3.00
288 lin.ft. vitrified drain tile, 24 in.	3.50	4.00	5.00
24 lin.ft. vitrified drain tile, 24 in.	4.00	4.00	5.00
96 lin.ft. vitrified drain tile, 36 in.	7.50	5.75	6.00
953.14 cu.yd. concrete class A	22.00	25.00	23.00
47.50 cu.yd. concrete class B	22.00	30.00	23.00
44.71 cu.yd. concrete class B	28.00	20.00	22.00
49.64 cu.yd. concrete class B	22.00	25.00	22.00
755 cu.yd. structural excavation	2.00	1.50	2.00
59 cu.yd. structural excavation	2.00	2.00	2.00
58,405 lb. reinforcing steel	0.055	0.05	0.07
Cleaning, painting, repairing 312 ft. steel bridge (lump sum)	3,000.00	4,500.00	3,500.00
Cleaning, painting, repairing 360 ft. steel bridge (lump sum)	1,750.00	3,000.00	1,500.00
Extended totals	*$271,558	$396,448	$436,699

*Bid did not include furnishing material for gravel and shell roads.

Buildings (Continued)
St., to P. Hall, 934 South Raymond Ave., Pasadena, $295,000.

Calif., Los Angeles—Theatre—H. & H. Circuit, Title Insurance Bldg., rein.-con. theatre, Pico and Norton Sts., to Burck Constr. Co., 325 South Hill St., $300,000.

Calif., Oakland—School and Convent—G. McCrea, archt., 369 Pine St., San Francisco, constructing 1st unit of church buildings, 3 story and basement, rein.-con., to W. G. McGinty & Sons, Federal Realty Bldg., $52,138, for Church of Lady of Lourdes. Bids for other units will be asked later.

Ont., Waterloo—School—Bd. Educ., 2 story and basement, 8 room, concrete, brick and steel, general contract to Ellert Bros., Park Ave., $101,000; heating, plumbing, etc., to W. Knell & Co., 45 King St. W. Total est. $150,000.

Federal Government Work

PROPOSED WORK

N. Y., Ft. Tilden—Plotting and Switchboard Room—U. S. Engineer, Army Bldg., 39 Whitehall St., New York, plans plotting and switchboard room, here.

Ala., Florence—Displacement tanks, etc. —U. S. Engineer, Florence, plans to purchase displacement tanks, countersights, castings and other parts for regulating gates of Wilson Dam.

O., Cincinnati—Towboats—U. S. Engineer, 405 Custom House, plans to purchase oil-engine, electric driven towboats.

Mich., Battle Creek—Hospital—U. S. War Veterans' Bureau, 1044 Arlington Bldg., Wash., D. C., having plans prepared Neuro-Psychiatric Hospital at Camp Custer, here. C. R. Forbes, dir. Noted Aug. 31.

Calif., San Diego—Garage, Sewer, etc.—Spec. 4741—Bureau Yards & Docks, Navy Dept., Wash., D. C., rejected bids for garage, sewer, pavement and fence, here. Noted Nov. 16.

BIDS DESIRED

Mass., Boston—Remodeling—Jan. 18, by Treas. Dept., Wash., D. C., remodeling Post Office Screen in U. S. Post Office and Sub-Treasury, here. J. A. Wetmore, acting superv. archt.; adv. this issue.

Pa., Phila.—Dredging—Jan. 17 at office U. S. Engineer, 815 Witherspoon Bldg., dredging in Delaware River between here and Trenton, N. J.

Pa., Phila.—Scows—Jan. 15 at office U. S. Engineer, 815 Witherspoon Bldg., 4 steel dump scows.

Del., Wilmington — Scows — Jan. 15 at office U. S. Engineer, for 2 wooden dump scows; adv. this issue.

Virginia—Dredging—Jan. 15 at office U. S. Engineer, Custom House, Norfolk, dredging 50,000 cu.yd. Appomattox River. J. C. Oakes, ch. engr. Virginia Dist.

W. Va., Huntington—Lock Operating Machinery, etc.—Jan. 23 at office U. S. Engineer, lock operating machinery, etc., for Dam 30, Ohio River; adv. this issue. Noted Nov. 23.

Mo., St. Louis—Levee Work—Jan. 24, at office Secretary Mississippi River Comn., 1311 International Life Bldg., levee work in Sny Island Levee D.D., Illinois., adv. this issue.

Ore., Astoria—Piers—Spec. 4615—Jan. 17 by Bureau Yards & Docks, Navy Dept., Wash., D. C., for piers, here.

Calif., Crescent City—Furnishing Stone, etc.—Feb. 15 at office, U. S. Engineer, 401 Custom House, San Francisco, furnishing and delivering approximately 80,000 ton stone for repairing and extending present breakwater approximately 400 to 600 lin.ft. Noted Nov. 16.

Alaska—Bridges—Jan. 22, by C. E. Dole, genl. purch. agt., Alaskan Eng. Comn., 422 Bell St. Terminal, Seattle, Wash., for 1 steel viaduct, two 40 ft. girder spans, two 74 ft. spans, one 80 ft. span and two steel towers, over Eagle Creek; one 124 ft. steel span over Noyes Slough; steel span over Mountain Creek. U. S. Engineer Office, New Post Office Bldg., Portland, Ore., engrs.

BIDS RECEIVED

Mich., Detroit—Dredging—U. S. Engineer, 337 Federal Bldg., dredging and rock removal in Livingstone Channel, Detroit River, (1) 323,000 cu.yd. earth excav. with possible over depth of 16,000 cu.yd. (2) 175,000 cu.yd. rock with possible over-depth 86,000 cu.yd., from M. Sullivan Dredging Co., 853 Iroquois Ave., (1) $0.50 (2) $3.50; Dunbar & Sullivan Dredging Co., 2212 Dime Bank Bldg., (1) $0.50 (2) $3.50; Great Lakes Dredge & Dock Co., Williamson Bldg., Cleveland, O., (1) $0.45 (2) $3.70. Noted Nov. 16.

Calif., Livermore — Buildings, Electrical Work, etc.—C. R. Forbes, dir. U. S. Veterans' Bureau, Arlington Bldg., Wash., D. C., opened bids for 29 rein.-con. buildings for U. S. Veterans' Hospital, here, from J. Walsh, 85 2nd St., San Francisco, (1) $1,559,800 (2) $19,800 (3) $75,740 (4) $75,740 (5) $69,880 (6) $41,000 (7) $73,600 (8) $95,500 (9) $21,400 (10) $12,080 (11) $12,850 (12) $9,800 (13) $14,540 (14) $12,280 (400 days); unit prices (1) excavation 1.60 (2) concrete $15 (3) rein.-con. $22 (4) reinforcing steel $61 (5) structural steel $109 (6) brick $40 (7) gravel road $1.25, B. Trost, 26th and Howard Sts., San Francisco, (1) $1,568,000 (2) $18,200 (3) $67,000 (5) $56,950 (6) $45,650 (7) $72,900 (8) $94,400 (9) $17,900 (10) $11,900 (12) $11,500 (13) $14,700 (14) $12,400 telegraphic modifications (1) add $202,723 (2) $3,298 Building 1, (3) $19,875 Building 6 (4) $18,885 Building 8 (5) $6,320 Building 12 (6) $10,619 Building 14 (7) $14,891 Building 15 (8) $374 Building 16 (9) $1,043 Building 18 (10) $1,991 Building 19 (12) $1,935 Building 21 (13) $3,150 Building 23 to 25 and 27 to 30 (14) $3,750 Building 31 to 32, (450 days), unit prices (1) $1.50 (2) $12 (3) $30 (4) $70 (5) $140 (6) $45 (7) $0.60 (8) $0.22, Lange & Bergstrom, 722 Sharon Bldg., San Francisco, (1) $1,881,495 (2) $20,000 (3) $84,000 (5) $67,600 (6) $50,700 (7) $76,700 (8) $113,000 (9) $21,700 (10) $12,600 (11) $12,400 (12) $12,400 (13) $17,400 (14) $15,100, unit prices (1) add $2.25 deduct $1 (2) add $20 deduct $12 (3) add $29 deduct $23 (4) add $70 (5) add $130 deduct $100 (6) add $55 deduct $45 (7) add $2.30 deduct $1.20 (8) add $0.30 (400 days); plumbing, heating, ventilating, outside piping, and garage in above hospital, from Latourrette-Fical Co., 2761 Sacramento Blvd., Sacramento, (1) $327,200 (2) $1,900 (3) $8,400 (4) $8,100 (5) $6,700 (6) $5,700 (7) $10,800 (8) $22,000 (9) $2,900 (10) $200 (11) $2,100 (12) $2,200 (13) $1,300 (14) $1,300 (300 days), J. Smyth Plumbing and Heating Co., Spokane, Wash., (street address not available) (1) $358,000 (2) $2,808 (3) $10,027 (4) $10,027 (5) $8,904 (6) $6,165 (7) $16,498 (8) $31,703 (9) $2,688 (10) $3,095 (11) $2,212 (12) $1,131 (13) $1,925 (14) $1,240 (365 days), S. W. Rittenhouse, 1327 Taylor St., Wash., D. C., (1) $394,719 (2) $1,768 (3) $9,240 (4) $9,240, (5) $8,000 (6) $5,663 (7) $12,759 (8) $30,444 (9) $2,243 (10) $4,071 (11) $1,337 (12) $1,075 (13) $1,311 (14) $1,136 (308 days); electric work, from F. E. Newberry Electric Co., 359 Sutter St., San Francisco, (1) $181,137 (2) $1,671 (3) $5,237 (4) $5,237 (5) $5,226 (6) $3,243 (7) $3,392 (8) $6,032 (9) $684 (10) $554 (11) $531 (12) $1,009 (13) $1,951 (14) $2,048 (475 days) Butte Electric and Mfg. Co., 534 Folsom St., San Francisco, (1) $183,400 (2) $1,636 (6 days) (3) $6,191 (4) $6,138 (5) $4,960 (6) $3,529 (7) $4,064 (8) $4,684 (9) $2,373 (10) $6,026 (11) $766 (12) $1,344 (13) $1,721 (14) $2,074 telegraphic modication add $3,000 to item (1) (300 days); refrigerating equipment in above from Cyclops Iron Wks., 837 Folsom St., San Francisco, $18,516, Automatic Refrigerating Co., 536 Munsey Bldg., Wash., D. C., $32,460 modification $20,985, Vulcan Iron Wks., 1849 Kearney St., San Francisco, $21,992; kitchen equipment, from L. Ellerbrock, Inc., 20 South Frederick St., Baltimore, Md., $36,800 (180 days); Mangrum & Otter, Inc., 827 Mission St., San Francisco, $39,048 (120 days), Nathan-Dohrmann Co., Geary and Stockton Sts., San Francisco, $40,720, (90 days); laundry equipment from Troy Laundry Mchy., Ltd., 133 Center St., New York City, $23,381 (45 days), Amer. Laundry Mchy. Co., Norwood Sta. Cincinnati, O., $23,771, (90 days) Steck Mfg. and Gear Co., 2130 Folsom St., San Francisco, $30,000. Noted Nov. 23.

CONTRACTS AWARDED

Pa., Pittsburgh—Steel Hull—U. S. Engineer, Pittsburgh, for 1 steel dipper dredge hull, to Penn Bridge Co., Beaver Falls, $23,145. Noted Dec. 21.

Va., Cape Henry—Power Houses—U. S. Engineer, Norfolk, for 2 power houses incl. wells, tanks, etc. at Ft. Story, here to H. M. Lucas, Maple Ave., Portsmouth, $28,907. Noted Nov. 9.

W. Va., Huntington—Dwellings—U. S. Engineer, Huntington, for 5 lockkeepers' dwellings at Dam 30, Ohio River, near Greenup, Ky., to H. Campbell & Sons, Huntington, $40,566. Noted Nov. 16.

Tenn., Memphis — Boilers — Mississippi River Comn., 1st and 2nd Dists., Custom House, 2 Clyde Type boilers for hydraulic grader, to Greeman Mfg. Co., Racine, Wis., $10,150. Noted Nov. 2

Tenn., Memphis—Machinery—Mississippi River Comn., 1st and 2nd Dists., Custom House, for turbine pumps, feed water heater, boiler-feed pumps and electric light plant, to T. M. Whitted, Realty Bldg., Charlotte, N. C. $12,257. Noted Nov. 2.

Wis., Milwaukee—Dredge Hull, U. S. Engineer, for 1 dipper dredge hull and house, to Green Bay Dry Dock Co., Green Bay, $58,900. Noted Nov. 2.

Ia., Knoxville—Hospital—Director U. S. Veterans Bureau, at office Quartermaster General, 2306 Munitions Bldg., Washington, D. C., for Neuro-Psychiatric Hospital, here, complete incl. water, lighting and heating systems, etc., to Warner Constr. Co., 730 Waveland Ave., Chicago, $889,974. Noted Dec. 21.

FEDERAL POWER COMMISSION

Applications for Licenses and Permits

Applications

357—Emery Consolidated Mining Co., Deer Lodge, Mont.—Wants license for transmission line from Deer Lodge to Emery.

358—Imboden Hydro-Electric & Manufacturing Co., Imboden, Ark.—Wants license for diversion dam, canal, and power house in Spring River, near here.

359—Kaweah Molybdenum Mines Co., Crocker Bldg., San Francisco, Calif.—Wants preliminary permit for dam, pipe line and power house in Kaweah River, Tulare Co.

360—Pigeon River Lumber Co., Wisconsin Rapids, Wis.—Wants preliminary permit for 5 power houses in lower 12 mi. Pigeon River, Cook Co., Minn.

Miscellaneous

PROPOSED WORK

Road Oiling and Distributing Machine—Belmont, N. Y.—Allegany Co. plans purchasing road oiling and distributing machine. $6,000.

Freight Dock—Erie, Pa.—State, Erie Co. and City plan new freight dock at foot of Peach St. $250,000. Address W. Morrison, member Penna. Peninsula Co., Erie.

Memorial Tower — Wilkes-Barre, Pa. — Comrs. Luzerne Co. having plans prepared memorial tower with clock. $100,000. T. Atherton, Wilkes-Barre, archt.

Power Plant Equipment—Memphis, Tenn. —Takes bids about Jan 20, furnishing and installing power plant equipment for new Parkway Pumping Station, incl. miscellaneous piping, feed water heater, feed pumps, boiler breeching, boiler settings, air flow meters, forced draft fans, central oiling system, and miscellaneous gauges and instruments. $140,000. Fuller & McClintock, 879 North Parkway, engrs.

Golf Course, etc.—Cleveland, O.—See "Buildings."

Road Machinery—Wisconsin—Following are county appropriations for road machinery during 1923. Ozaukee Co. $20,000 incl. drag line outfit, W. J. Ubbink, Port Washington, comr.; Chippewa Co. $7,000, incl. small patrol graders, P. O. Lokrantz, Chippewa Falls, comr. Polk Co. 1 large road grader, 12 patrol graders and rock crusher, C. W. Nystrom, Balsam Lake, comr.; Marinette Co. 12 patrol graders and 2 light motor trucks for road work, A. Eklund, Pestigo, comr.; Shawano Co. number of patrol graders, W. F. Meyer, Shawano, comr.

Park Improvements—Dallas, Tex.—Plans election in April to vote on $500,000 bond issue for park improvements, incl. roads, walks, etc. G. D. Fairtrace, city engr.

Traffic Signal System, etc.—Dallas, Tex. —City Comn. takes bids latter part of January, electric traffic signal system, towers, etc. $20,000-$30,000. H. Garrett, supt. Fire and Police Alarms.

Electric Light Extensions—Clinton, Okla. —See "Waterworks."

Electric Light Extensions—Weatherford, Okla.—See "Industrial Works."

Mains, Gas Holder, etc.—Portland, Ore.—Portland Gas and Coke Co., Gasco Bldg., plans to extend mains and erect gas holders, $600,000; extend and renew gas plants, $300,000; erect buildings and purchase miscellaneous equipment, $100,000. H. Pabst, genl. mgr.

Water Power Development — Pushthrough, N. F.—H. J. Crowe, Canadian Pacific Ry. Bldg., Toronto, Ont., had surveys made by H. L. Cooper & Co., engrs., 101 Park Ave., New York City, and Kerry & Chase, Ltd., engrs., 550 Confederation Life Bldg., Toronto, Ont., developing 100,000 hp. on Bay D'Est River and Bay D'Espoir on south coast. $8,000,000 to $10,000,000.

BRIDGE—SPOKANE, WASH.

Bids were opened by Bd. Pub. Wks., Dec. 8, for constructing West Spokane St. Bridge, Proposition 1, furnishing and erecting complete, (A) Jahn & Bressi, New York Bldg., Seattle; (B) J. A. McEachern Co., Colman Bldg., Seattle; (C) Scrobel Steel Constr. Co.; (D) Penn Bridge Co.; Proposition 2, furnishing only, delivered at bridge site, superstructure and machinery, (1) City Plan, (2) Strauss Plan, Bethlehem Shipbuilding Co., (1) $276,871, (awarded contract), (2) $260,863; Union Constr & Dry Dock Co., (1) $292,670, (2) $282,860; Felix Bridge Co., (1) $306 723, (2) $289,695; Proposition 3, furnishing and installing electrical equipment, (1) City Plan, (2) Strauss Plan, Westinghouse Electric & Mfg. Co., Alaska Bldg., Seattle, (1) $23,215 (awarded contract) (2) $29,030; Butte Electric & Mfg. Co., (1) $24,422 (2) $29,000; Jahn & Bressi, (1) $28,240 (2) $29,000; Proposition 4, erection of superstructure and machinery only, (A) Gerrick & Gerrick (awarded contract for City Plan); (B) E. E. Davis & Co.; (C) Jahn & Bressi. The unit bids on Propositions Nos. 1 and 4 are as follows:

	City Plan						
	Proposition No. 1				Proposition No. 4		
	A	B	C	D	A	B	C
3,850,000 lb. furnishing and erecting bridge steel	$0.08	$0.08½	$0.0894	$0.0993	$0.0135	$0.016	$0.017
320,000 lb. furnishing and erecting machinery steel	.22½	.26	.24	.25	.0175	.02225	.022
890 cu.yd. concrete counterweight	12.00	13.00	16.00	18.00	15.00	50.00	12.00
200 cu.yd. cinder counterweight	11.50	15.00	18.00	24.00	14.00	50.00	11.50
22,000 lb. steel counterweight	.06	.06	.06	.0485	.06	.06	.06
650 sq.yd. road floor, bascule leaves	18.00	18.00	17.00	18.30	14.00	13.50	18.00
544 ft. street car track, bascule leaves	2.75	4.00	5.50	4.10	4.50	3.75	2.75
256 sq.yd. sidewalk, bascule leaves	2.00	3.00	3.50	1.50	3.50	2.25	2.00
230 sq.yd. road on fixed part	17.50	16.00	16.50	17.30	14.00	13.00	17.50
550 sq.yd. road on approach spans	17.50	16.00	17.00	17.30	14.00	13.00	17.50
658 ft. street car tracks, spans and approaches	1.75	3.00	2.50	4.00	4.00	3.25	2.75
236 sq.yd. sidewalks, spans and approaches	4.50	4.00	4.80	3.00	3.50	3.50	4.50
86 sq.yd. machinery platform	4.80	5.00	4.80	6.00	3.75	4.50	4.80
Electrical equipment (lump sum)	25,000.00	25,000.00	37,800.00	25,700.00			
2 operators' houses	2,000.00	1,000.00	3,750.00	2,300.00	1,800.00	850.00	2,000.00
2 gas engines and clutches	3,000.00	3,000.00	3,500.00	3,450.00	300.00	300.00	500.00
2 machinery houses	500.00	500.00	2,300.00	2,100.00	1,200.00	300.00	1,500.00
Extended totals	$460,700	$482,926	$528,018	$555,562	$106,151	$110,224	$123,366
	Strauss Plan						
3,516,000 lb. furnishing and erecting structural steel	$0.08	$0.0810	$0.0887	$0.919	$0.0135	$0.016	$0.017
315,000 lb. furnishing and erecting machinery steel	.22½	.26	.242	.25	.0175	.0275	.022
1010 cu.yd. concrete counterweight	15.00	16.00	16.00	20.00	15.00	14.00	14.50
32,000 lb. steel counterweight	.06	.06	.06	.0485	.06	.06½	.06
674 sq.yd. road floor, bascule leaves	18.00	18.00	17.00	18.30	14.00	13.50	18.00
564 ft. street car track bascule leaves	2.75	4.00	5.50	4.10	4.50	3.75	2.75
265 sq.yd. sidewalk bascule leaves	2.00	3.00	3.50	1.50	3.50	2.25	2.00
206 sq.yd. road, bascule leaves	17.50	16.00	16.50	17.30	14.00	13.00	17.50
550 sq.yd. road on approach	17.50	16.00	17.00	17.30	14.00	13.00	17.50
638 ft. street car track on approach	2.75	3.00	5.50	4.00	4.00	3.25	2.75
246 sq.yd. sidewalk on approach	4.50	4.00	4.80	3.00	3.50	3.50	4.50
98 sq.yd. machinery platform	4.80	5.00	4.80	6.35	3.75	4.50	4.80
Electrical equipment (lump sum)	30,650.00	32,000.00	40,000.00	31,400.00			
2 operators' houses	2,000.00	1,000.00	3,750.00	2,300.00	1,800.00	600.00	2,000.00
2 machinery houses	1,500.00	500.00	2,300.00	2,100.00	1,200.00	500.00	1,300.00
Extended totals	$444,923	$458,300	$501,573	$532,367	$105,400	$110,338	$122,977

Miscellaneous (Continued)

Grain Elevator—Ft. William, Ont.—Bole Grain Co. Ltd., plans concrete grain elevator. $500,000.

Subway—Hamilton, Ont.—Plans subway, 66 ft. wide, under Grand Trunk Ry. tracks, Wentworth St., concrete, steel and stone. $100,000. E. R. Gray, city engr.

Transmission Lines—Niagara Falls, Ont.—Stamford Twp. plans to extend hydro electric lines through township. $38,000.

Asphalt Plant—Owen Sound, Ont.—Plans to purchase and install municipal asphalt plant. $50,000. D. H. Fleming, City Hall, engr.

BIDS DESIRED

Iron Trailer Trucks—Binghamton, N. Y.—Bd. Contract and Supply taking bids 2 iron trailer trucks for use by Bureau of Garbage and Ashes.

Motor Gasoline—New York, N. Y.—Jan. 3, by H. Bruckner, pres. Bronx Boro, Tremont and 3rd Aves., furnishing and delivering 6,000 gal. motor gasoline. $1,200. Former bids rejected. Noted Dec. 21.

Crusher—Trenton, N. J.—Bd. Freeholders Mercer Co. taking bids new crusher for county workhouse at Glen More. $30,000 to $40,000. H. F. Harris, Court House, engr.

Asphalt, Crushed Stone, Sand, etc. — Phila., Pa.—Dec. 30, by F. H. Caven, dir. pub. wks., City Hall, furnishing 14,400 cu. yd. sand, $25,000; 20,000 ton crushed stone, $40,000, 2,200 ton asphalt cement, $15,000; 80,000 gal. 19@23 degree fuel oil, $12,000; 225,000 gal. 30@36 degree fuel oil, $50,000. T. F. Armstrong, 316 City Hall, purch. agt.

Gravel—Louisiana—Jan. 9, by State Hy. Comn., Reymond Bldg., Baton Rouge, furnishing 13,452 cu.yd. washed gravel for surfacing Sect. C Federal Aid Project 116, Minden-Arcadia Highway, Webster Parish.

Wharf—Detroit, Mich.—Jan. 8, by Pub. Lighting Comn., East Atwater St., 1,049 ft. rein.-con. wharf, 36 ft. wide, on 50-80 ft. wood piles, intake flume 80 x 94 ft. resting on 50 and 60 ft. piles. Smith, Hinchman & Grylls, 800 Marquette Bldg., engrs.

Portland Cement—Wisconsin—Jan. 3, at office State Hy. Comn., Madison, 1,538,000 bbl. Portland cement for delivery during 1923. A. R. Hirst, state highway engr.

Gravel Pit Machinery—Sheboygan, Wis.—Sheboygan Co. taking bids gravel pit machinery, conveyors, etc. G. W. Ubbelohde, Court House, chn.

Rock Crusher and Grader—Minneapolis, Minn.—Jan. 8, by Auditor Hennepin Co., rock crusher, and 1 grader with scarifier attached. E. E. Terrell, co. surv.

Tractor and Snow Plow—Grand Forks, N. D.—Taking bids one 10 ton caterpillar tractor and one snow plow.

Steam Roller — Denison, Tex. — Taking bids 10 ton steam roller. $10,000. J. Field, Denison, engr.

Road Levee and Bridge—Redwood City, Calif.—Jan. 2, by Supervs. San Mateo Co., constructing road levee and bridge over Bean Hollow, 13,000 cu.yd. earth embankment, 175 cu.yd. concrete in bridge, 150 cu.yd. concrete, slope pavement on embankment, 32,400 ft. sheet piling, etc. $25,000. G. Kneese, co. surv. Noted Dec. 7.

Quarrying and Stone Crushing Equipment —Montreal, Que.—O. Martineau & Filo Ltd., 371 Marie Anne Ave. E., taking bids for quarrying and stone crushing equipment.

BIDS RECEIVED

Facade and Retaining Walls—New Orleans, La.—Bd. Port Comrs., 201 New Court Bldg., opened bids Dec. 14, facade at foot of Canal St., also retaining walls, filling and paving between Iberville and Poydras Sts., from Heary-Oakes Co., Inc., Perrin Bldg., $65,000 (200 days); G. F. Favrot, Canal Commercial Bank Bldg., $66,312 (238 days); T. H. Brockman, 1525 Berna St., $68,400 (270 days).

Traveling Crane—San Francisco, Calif.—City and San Francisco Co. installing electric travel crane in Moccasin Creek Power Plant of Hetch Hetchy Project, from Pawling & Harnischfegar Co., 32 Beale St., $30,475; Cyclop Iron Wks., 837 Folsom St., $32,170 alternate $27,670; Pratt & Whitney, 16 Fremont St., $33,050; Whiting Corp., Call Bldg., $24,675. Noted Nov. 16.

CONTRACTS AWARDED

Portland Cement—New York, N. Y.—H. Bruckner, pres. Bronx Boro, Tremont and 3rd Aves., furnishing and delivering 2,500 bags portland cement, to E. E. Buehler, 103 Park Ave., $1,825. Noted Dec. 21.

Subway — Brooklyn, N. Y. — Transit Comn., 49 Lafayette St., New York, two-track subsurface railroad extending under Bushwick Ave. from Meserole to Boerum Sts. to F. L. Cranford, Inc., 149 Remsen St., $750,983; also subsurface railroad extending along and under 4th Ave. from 87th to 95th Sts. to T. A. Gillespie Co., 7 Dey St., New York, $1,485,151. Noted Dec. 14.

Shaft—Brooklyn, N. Y.—Bd. Estimate & Apportionment, City Hall. New York, Shore Rd. shaft, here, for freight and passenger railroad tunnel in Boros of Brooklyn and Richmond, under New York Bay, to McGovern & Co., 50 East 42nd St., New York, $494,000. Noted Nov. 30.

Steel—Flushing, N. Y.—Transit Comn., 40 Lafayette St., New York, furnishing and erecting steel for elevated portion of Rapid Transit R.R., Flushing Route, extending over and along Roosevelt Ave., private property and intersecting streets from Alburtis to Riverside Aves., here, to Phoenix Bridge Co., 132 Nassau St., New York, $615,880. Noted Dec. 21.

Levee—New Orleans, La.—Orleans Levee Bd., New Court House Bldg., new levee on left bank of Mississippi River, to H. Reynolds, Maison Blanche Bldg., $26,801.

Foundation—Beloit, Wis.—Beloit Water, Gas & Electric Co., 429 East Grand Ave., plain concrete foundation for 3 story (ultimately 7 story), 80 x 134 ft., brick and rein.-con., to J. Schneiberg, 945 Bluff St.

Headers and Dykes—Alamosa, Colo.—State Hy. Dept. and Comrs. Alamosa Co. will build headers and dykes in Rio Grande del Norte River near here, by force account. Cost $21,037. L. D. Blauvelt, state highway engr. Noted Dec. 14.

Electroliers—Berkeley, Calif.—Installing 151 electroliers in University Ave. and other streets, to Osborne Electric Co., Turlock, $36,503. Noted Dec. 14.

Ferry Slips—Pittsburg, Calif.—Pittsburg-Sacramento Ferry Co., O. G. Klatt, secy., c/o Golden Gate Ferry Co., foot Hyde St., having plans prepared and soon takes bids 2 ferry slips. $65,000. Dredging, fill and roadway, let to Lanteri Shipyards, Pittsburg, $20,000.

Grandstand — Tanforan, Calif. — Pacific Coast Jockey Club, 1st Natl. Bank Bldg., San Francisco, constructing steel frame and wood grandstand, 5,000 seats, here, to Clinton Constr. Co., 923 Folsom St., San Francisco. $124,212. Noted Dec. 21.

Gas Mains—Montreal, Que.—Montreal Light, Heat & Power Co., Craig St. W., will build gas mains as follows: 9,700 ft. 20 in. c.i. pipe, from Sta. A Elm Ave. to Hochelaga and Pie IX Aves., $48,136; 2,640 ft. 12 in. c.i. pipe in Davidson St., from Rouen to St. Catherine Sts., $9,347; 540 ft. 8 in. c.i. pipe in Davidson St. from St. Catherine to Notre Dame Sts., $1,550; 3,720 ft. 12 in. c.i. pipe in Bennett St. from Girard to St. Catherine Sts., $24,969; 74 ft. 4 in. c.i. pipe in St. Joseph Blvd., $168. Work will be done by day labor. E. S. Stanton, supt. gas distribution. Noted Nov. 23.

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Copy: Official Proposals reaching our New York Office by 10 A. M., Tuesday can usually be printed in the issue out Thursday.

Rate:
40 Cents a Line an Insertion

Plans and Specifications for inspection by distant bidders may be filed at any of the Engineering News-Record offices without charge.

THESE ADVERTISEMENTS ARE OFFICIAL NOTICES THAT BIDS ARE WANTED FROM BIDDERS EVERYWHERE.

OFFICIAL PROPOSALS

Bids: Jan. 23.

Intercepting Sewer

Toledo, Ohio.

Sealed proposals will be received by the Director of Public Service, Toledo, Ohio, until twelve o'clock noon, eastern standard time, on the 23rd day of January, 1923, and then publicly opened and read for the construction of Contract No. 5 of the Intercepting Sewer System, consisting of

18,955 feet of 87 in. Circular Sewer
2,255 feet of 84 in. Circular Sewer
2,640 feet of 78 in. Circular Sewer

all of which will be built in tunnel, together with manholes and appurtenances.

Bidders are invited to submit prices on monolithic concrete, vitrified segment block and brick.

Plans, specifications, contract and bond forms can be secured at the office of the Director of Public Service upon deposit of twenty dollars ($20.00) for each set, which will be refunded provided they are returned in good order on or before February 20, 1923.

Information regarding the work can be obtained through the following offices of our consulting engineers, Fuller & McClintock: 170 Bro. dway, New York, 319 Summit-Cherry Building, Toledo, 421 Produce Exchange Building, Kansas City Mo., 879 N. Parkway, Memphis, Tenn., and 1001 Chestnut Street, Philadelphia, Pa.

Each proposal must be accompanied by a bond executed by the bidder and a surety company satisfactory to the Director of Public Service in the sum of Ten Per Cent (10%) of the amount of the bid, or in lieu of a bond the bidder may deposit with the Director of Public Service, a certified check on a solvent bank, payable to the order of the Director of Public Service, in amount equal to such bond, said bond or certified check being required as a guarantee that if the bid be accepted, a contract will be entered into and its performance properly secured.

The contract bond will be Fifty Per Cent (50%) of the amount of the contract. Labor and material bids must be separately stated with the price therefor.

The Director of Public Service reserves the right to reject any or all bids or to accept any bid which he may deem advantageous to the City of Toledo.

W. T. JACKSON,
Director of Public Service.
GORGE E. LASKA,
Secretary.

Bids: Jan. 8.

Pumping Station Equipment

White Hall, Ill.

Sealed bids will be received by the Hillview Drainage and Levee District at White Hall, Ill., up to the hour of 1 o'clock p.m. of January 8, 1923, for certain drainage pumping station equipment, the same to be furnished f.o.b. cars, Hillview, Ill., and to consist of one 15 in. vertical submerged centrifugal pump, one 30 in. horizontal centrifugal pump, one 150 hp. motor, one 50 hp. vertical motor, two switchboards, oil switches, starting apparatus, etc.

Detailed information may be obtained from the engineers by depositing check for $15.00, which will be returned providing said plans, etc., are returned in good condition before date of opening bids.

CALDWELL ENGINEERING CO.,
Engineers,
Jacksonville, Ill.

OFFICIAL PROPOSALS

Bids: Jan. 16.

Sewers

Richmond, Va.

Sealed proposals will be received at this office until 12 oclock noon, Tuesday, January 16, 1923, for the building of Reinforced Concrete, Precast Concrete, Segment Block, Brick and Vitrified Pipe sewers, at various places within the limits of the City of Richmond.

The approximate cost of the work is $700,000.00. Of this amount $250,000.00 will be for various contracts for materials, to be furnished by the City, at the site of the work, and $450,000.00 for various contracts for construction.

A deposit of $10.00 per set is required for plans and specifications before they are delivered to bidder, which amount is returnable after bidder's proposal is received.

Forms of proposals can be obtained on application.

A certified check for amount stated on proposals must accompany each bid as a guaranty of execution of contract. Director of Public Works reserves the right to reject any and all bids.

ALLEN J. SAVILLE,
Director of Public Works.

Bids: Jan. 11:

Road Improvement

Atlantic City, N. J.

Sealed bids for the improvement of portions of Fairmount and other Avenues in Atlantic City, N. J., will be received by the Board of Commissioners at a meeting to be held in the City Hall at 3 p.m., Thursday, January 11, 1923.

The work includes approximately 63,200 sq.yd. sheet asphalt pavement; 7,200 sq.yd. vitrified fire clay block pavement and 1,150 sq.yd. granite block pavement, all upon concrete foundations; 12,860 lin.ft. granite curbing; 1,056 l'n.ft. bluestone curbing; and incidental work (for City Engineer's estimate by which the bids will be tested see "Notice to Contractors").

The board reserves the right to reduce the work to be done by striking out any streets or sections thereof, but not below $200,000, if the bid amounts to this much.

Certified check is required in the sum of $5,000.

The board reserves the right to reject any or all bids as provided in the "Notice to Contractors."

Blank forms of proposal and printed envelopes, as well as Notice to Contractors, specifications and forms of contract and bond will be furnished upon application to the City Engineer, Room 6, City Hall Annex, Atlantic City, N. J.

LOUIS A. STEINBRICKER, Director,
Dep't Street and Public Improvements.
J. W. HACKNEY, City Engineer.

Bids: Jan. 15.

Mechanical Equipment for Sewage Screening Plant

St. Petersburg, Fla.

Sealed proposals for mechanical equipment for sewage screening plant will be received at the office of the Director of Finance of the City of St. Petersburg, Florida, until 7:30 p.m., January 15, 1923. Specifications on file with the director of finance. Certified check for $500 to accompany bid.

H. T. DAVIS,
Director of Finance.

OFFICIAL PROPOSALS

Bids: Jan. 23.

Paving

Laredo, Texas.

Sealed proposals will be received by the City Council of Laredo, Texas, at the office of the Mayor, City Hall, until 4:45 p.m., January the 23rd, 1923, for approximately one hundred and twenty thousand (120,000) sq. yds. of paving.

Bids will be received on the following types of paving:

Bitulithic, Limestone Rock Asphalt, Sheet Asphalt, Vitrified Brick and Two Course Concrete.

Plans and specifications may be seen at the office of S. F. Crecelius, Paving Engineer, Puig Building, Laredo, Texas, after January the 1st, 1923.

Bids will be publicly opened and read at 5 p.m., January the 23rd, and the award, if any, will be made after considering bids in connection with the relative values of the different types of paving.

Payment for the city's share of the work will be made monthly in cash for eighty-five (85%) per cent of the work done. Payment for the amount assessed against abutting property will be one-sixth (1/6) cash on completion and balance in five (5) annual payments on improvement certificates bearing interest at seven per cent (7%) per annum.

L. VILLEGAS, Mayor.

Bids: Jan. 2.

Sewer

Wilkes-Barre, Pa.

Sealed proposals will be received by Fred H. Gates, City Clerk, Wilkes-Barre, Pennsylvania, for constructing a four and six-foot circular brick or segmental block sewer, about seventeen hundred feet in length. Bids close Tuesday, January 2nd, 1923, at 12 o'clock noon, and will be opened by City Council on the same day at three o'clock P.M. Plans and specifications may be had from B. K. Finch, City Engineer, upon making a deposit of $10.00, said deposit to be refunded upon receipt of bid or upon return of specifications to City Engineer on or before January 15th, 1923. Each bid must be accompanied by a certified bank check of bidder in the sum of $1,000.00 made payable to the City of Wilkes-Barre. Successful bidder must furnish to said city a surety company bond in the full amount of contract. Proposals to be endorsed "Proposals for Sewer" and addressed to Fred H. Gates, City Clerk, City Hall, Wilkes-Barre, Pennsylvania. The City Council reserves the right to reject any or all bids received.

Bids: Jan. 8.

Team Grading Work

White Hall, Ill.

Sealed bids will be received by the Hillview Drainage and Levee District up to 1 o'clock p.m. on Monday, the 8th day of January, 1923, at White Hall, Illinois, for the raising of the levee. The work is divided into 8 sections with a total yardage of 21,000 cu.yd. Each section is approximately one mile in length. This work is suitable as team work only. Detailed information may be obtained from the engineers by depositing check for $15.00, which will be returned providing said plans, etc., are returned in good condition before date of opening bids.

CALDWELL ENGINEERING CO.,
Engineers,
Jacksonville, Ill.

Volume 89 New York, December 28, 1922 Number 26

Engineering News-Record

A CONSOLIDATION OF ENGINEERING NEWS AND ENGINEERING RECORD, WITH WHICH IS INCORPORATED THE CONTRACTOR

E. J. MEHREN, *Editor*

Foundation and Framing Design of Colfax Power Station 1102
By M. E. THOMAS.
STRUCTURE CHARACTERIZED by simplicity. Concrete mat foundation on gravel. Column loads distributed by reinforced-concrete walls. Special retaining wall and sea wall held by ties.
Engineering News-Record, December 28, 1922. 7½ cols. Ill.

Belated Settlement of an Old Aqueduct 1105
By FREDERIC I. WINSLOW.
Engineering News-Record, December 28, 1922. ½ col.

Maintenance Engineering in Large Industrial Plants 1106
By SAMUEL E. BIRD.
Engineering News-Record, December 28, 1922. 4¾ cols.

Column Strength of Single Angles 1108
Engineering News-Record, December 28, 1922. 1⅓ cols. Ill.

Miami Conservancy Work Completed 1109
Engineering News-Record, December 28, 1922. 1⅓ cols. Ill.

Heavy Trestlework Required on New Logging Railroad 1110
Engineering News-Record, December 28, 1922. 3¼ cols. Ill.

Operation of a Drainage Pumping Plant 1111
Engineering News-Record, December 28, 1922. ½ col.

How to Inspect Asphalt Paving Mixtures at the Plant 1112
By W. J. EMMONS.
Engineering News-Record, December 28, 1922. 8½ cols.

New Outfall Sewer at Los Angeles 1116
Engineering News-Record, December 28, 1922. ¾ col.

Operator's Viewpoint of Canal and Structure Design 1116
By GEORGE EBNER.
Engineering News-Record, December 28, 1922. 2¼ cols. Ill.

The Proper Term for Water-Works Bonds 1117
By CHARLES W. SHERMAN.
Engineering News-Record, December 28, 1922. ½ col.

Hydrology of the 1922 Flood in the Illinois River 1118
By H. E. GROSBACH.
Engineering News-Record, December 28, 1922. 2¼ cols. Ill.

Small Tunnels Lined With Precast Concrete Ribs 1119
Engineering News-Record, December 28, 1922. 1⅓ cols. Ill.

Dust Removal by Vacuum Sweeping in Grain Elevator 1120
Engineering News-Record, December 28, 1922. 2 cols. Ill.

Unique Sewage-Works and Pump-Equipment Bid Plan 1121
By GLEN D. HOLMES.
Engineering News-Record, December 28, 1922. 6½ cols. Ill.

Use of Copper Sulphate and Effect on Filter Runs 1124
By J. E. GARRATT.
Engineering News-Record, December 28, 1922. 2¼ cols.

Fire-Fighting Ability of Chicago Summarized 1125
Engineering News-Record, December 28, 1922. 1 col.

From Job and Office 1126
Third Curve Replaces Two Curves Joined by Tangent—Four Solutions.
Steel Hook Handles Concrete Pipe.
Trench Backfill Covered with Concrete Slabs.
Inexpensive Method of Mounting Maps.
By EMILE LOW.
Fast Time Recorded in Casting Concrete Segmental Sewer Blocks.
Piles Are Set in Concrete to Avoid Inconvenient Driving.
By GEORGE W. MCALPIN.
Dipping Trough for Iron Pipe Made From 12-in. Casing.
Acetylene Torch Melts Pipe Joint Filler.
Graphs Allow Rapid Yardage Calculation.
By R. C. HARDMAN.
Contractor and Footing Course.
By FRANK E. SANBORN.

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Weekly Construction Market 1144

The First Issue of the New Year

IN its first issue of each new year *Engineering News-Record* has followed the policy of indicating the trend of progress in those fields of civil engineering and construction in which outstanding developments have occurred. It has also suggested, where possible, the course of future activities. The Jan. 4 issue is planned in accordance with this policy.

ONE of its features will be a group of articles on the **Labor Situation,** covering labor shortage, seasonal employment, apprenticeship, and immigration.

A wide range of interest will be covered by other articles. The **Mississippi River Floods** will receive extensive treatment and an article on **Irrigation** will discuss the Government's responsibility for developing the remaining arid lands in the West.

Traffic Control in cities will be among the chief topics of interest, and there will be a review of the year's developments in **Concrete Design.**

Hydro-Electric Practice on the Pacific coast will be reflected in a comprehensive review of the year's developments.

There will be a survey of progress during 1922 in **Construction,** supplemented by an article which will cover improvements made in **Construction Equipment and Materials.**

IT is impossible to give here an adequate summary of the issue. For the busy engineer, contractor, and manufacturer it will present concisely a survey of major developments in the fields of civil engineering and construction.

McGRAW-HILL COMPANY, INC., Tenth Ave. at 36th St., NEW YORK

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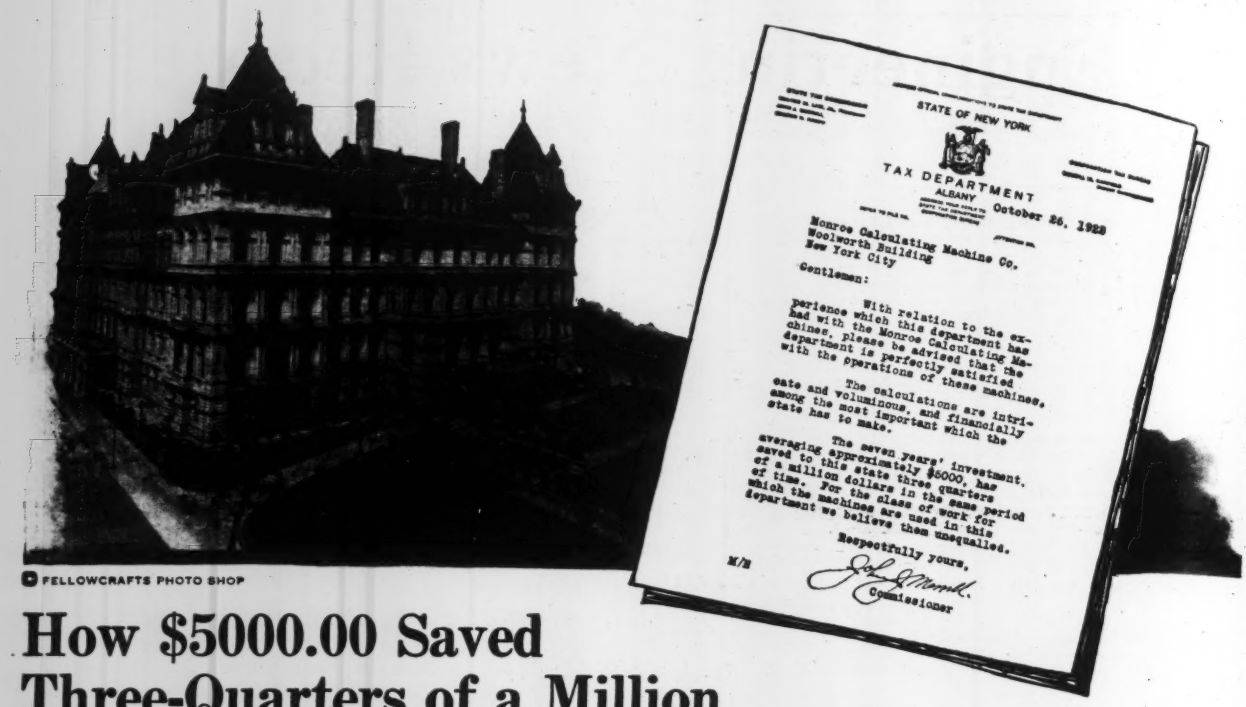


FELLOWCRAFTS PHOTO SHOP

STATE OF NEW YORK

TAX DEPARTMENT

ALBANY October 26, 1922

Monroe Calculating Machine Co.
Woolworth Building
New York City

Gentlemen:

With relation to the experience which this department has had with the Monroe Calculating Machines, please be advised that the department is perfectly satisfied with the operations of these machines.

The calculations are intricate and voluminous, and financially among the most important which the state has to make.

The seven years' investment, averaging approximately $5000, has saved to this state three quarters of a million dollars in the same period of time. For the class of work for which the machines are used in this department we believe them unequalled.

Respectfully yours,

M/B

Commissioner

How $5000.00 Saved Three-Quarters of a Million

IN the above letter, the Tax Commissioner of the State of New York tells how an investment of $5000.00 in Monroe Calculating Machines resulted in a saving of three-quarters of a million dollars.

And not alone New York State. Within the past month the Illinois State Highway Department made an additional installation of nine Monroes—itself a splendid tribute to Monroe service.

The Monroe has proved itself of great value to the engineering profession in every phase of its figure-work, whether computing level-readings and areas, figuring estimates, payrolls or costs, or working on the complicated calculations of laboratory tests and formulae.

Many have taken advantage of its superior features—its remarkable ease and simplicity of operation, its first-time accuracy.

Wherever there is figure-work to be done, the Monroe will save time, money and costly mistakes for you Its value may be determined right in your own office without the slightest obligation.

Made in three sizes: 20, 16 and 12-place capacities.

Ask for a free trial by using the coupon below.

Offices rendering Monroe service at all Principal Points in the United States and Canada and throughout the World

Monroe Calculating Machine Company,
Woolworth Building, New York City

Without obligation (check items desired):
[ ] Send your folder describing the new Monroe.
[ ] Arrange for demonstration in our office on our work.

*Firm Name*_____

*My Name*_____

*Address*_____

E.N.-R. 12-28-22

MONROE

REG. TRADE MARK

Calculating Machine Company

General Offices: WOOLWORTH BUILDING, N. Y.

Plant: ORANGE, N. J

SPEED!

Our contract No. 1168 with the United Gas Improvement Company of Philadelphia involved placing

RAYMOND CONCRETE PILES

beneath a gas holder foundation at Syracuse, N. Y., for the Syracuse Lighting Company. Some of our days records were as follows:

Date	Number of Piles	Footage
October 30th	105	1569
31st	72	1354
November 1st	85	1468
2nd	79	1265
3rd	100	1404
4th	56	688
6th	90	1233
7th	189	2550

These figures cover a 10-hour day. Superintendent, Warren Ellis. Foreman, Michael Nolan. We are proud of these men, of their work, and of the Raymond Method of Concrete Pile installation.

RAYMOND CONCRETE PILE CO.

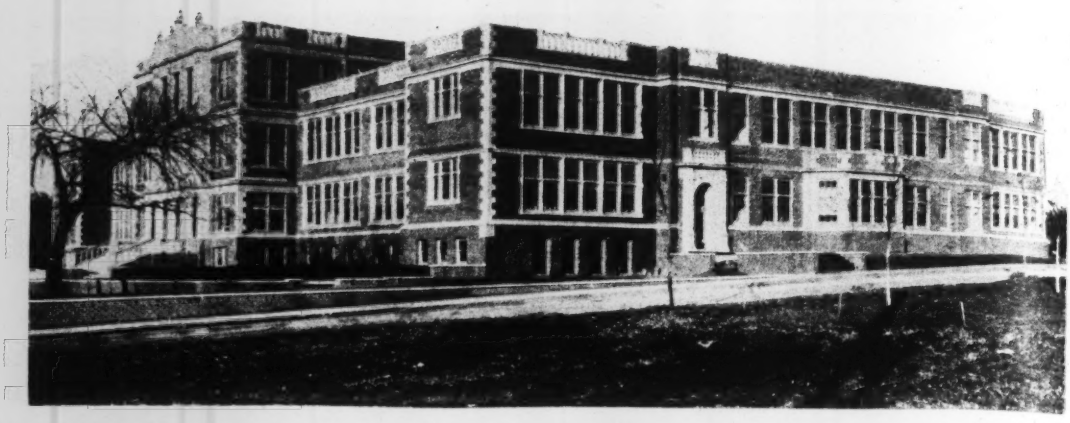
New York: 140 Cedar Street Chicago: 111 West Monroe Street

Montreal, Canada

Branch Offices in Principal Cities

"A Form for Every Pile A Pile for Every Purpose"

Another Record Broken



Builders of the Prescott School, Lincoln, Nebraska, made many savings and secured a stronger, more durable wall through the use of Carney.

Architects: Fiske & Meginnis, Lincoln, Neb.

Contractors: Olson Const. Co., Lincoln, Neb.

Lower Bids With More Profit

WRITING Carney in your plans is writing profit on your books. Thousands of contractors know that Carney enables them to make lower bids and to give their clients a better job with more profit to themselves.

To those who have never used Carney, this may seem impossible. The following economies show why you can make lower bids.

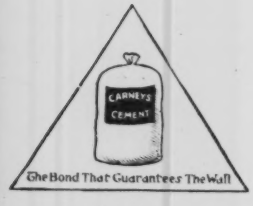
The first cost of Carney is less. You have no lime to buy, for Carney does not require lime in mixing. There is no slacking of lime. The simple formula, "One part Carney — three parts sand — no lime," prevents mistakes and makes mixing easy.

Mixing Carney requires less labor and is quicker. There is no waste for left-over mortar can be used the next day by re-tempering with water. Carney lays approximately 1000 bricks to the barrel. Men work faster on the wall because Carney is more plastic and smoother working.

On top of these advantages Carney builds a stronger wall. The mortar becomes harder than the brick or tile it joins. Thus it is that Carney enables you to submit lower bids, get more contracts, and build a better wall—all with more profit.

It Will Pay You to Investigate

It will pay you to investigate a cement with the advantages given above. Let us send you the Carney Catalog for your files.



Carney Cement Company

Cement Makers Since 1883

Mankato, Minn.

District Sales Offices:

Leader-News Bldg., Cleveland; Chamber of Commerce Bldg., Chicago; Omaha National Bank Bldg., Omaha; Syndicate Trust Bldg., St. Louis; Book Bldg., Detroit; Builders' Exchange, Minneapolis

Specifications: 1 part Carney, 3 parts sand; no lime

CARNEY'S CEMENT

For Brick and Tile Mortar

Why Cement Sacks Are Filled Upside Down

The curious method of filling portland cement sacks—filling them upside down after they have been tied—is a striking example of progress made in industrial processes.

Until twenty years ago, cement sacks were filled practically as all other sacks always had been. You had a huge bin of this finer-than-flour material. A workman at the door of the bin hung a sack up, with its mouth open, on a wooden frame and filled it with an ordinary shovel. Then he set it on a scale, and with a hand scoop adjusted the weight of the contents to the exact 94 pounds required, after which he tied the sack by hand and tossed it on a truck to be hauled into a freight car.

That was the way as little as twenty years ago, and no one had thought much of doing it differently.

But now what happens?

The cement is taken from the bin by an automatic conveyor—a moving belt or bucket chain—and elevated and dumped into the hopper of a filling machine. This is a small bin with an elaborate mechanism including a fan inside; and at the bottom of it is a 1-inch spout through which the cement flows like water. The filler sits at the spout. Sacks have been brought to him already tied at the top but with an opening guarded by a valve at the bottom. The filler slips the opening over the spout and turns on the cement. When the sack is filled to exactly 94 pounds it tips a scale, automatically turns off the cement, and with a little push from the filler falls on another moving belt that carries it out and drops it at the freight car door.

By the old method, a team of four men could fill and load 1,600 sacks a day. By the new method, a similar team can fill and load 8,000.

The filling machine is costly, and royalties must be paid on the valve sack process, but the new arrangement has meant a considerable labor saving. It has meant especially that the manufacturers have been able to get their product out more promptly to users during the rush period of summer and fall. For in that period labor of the kind required for sacking and loading is generally hard to get.

Even with the improvements, a medium sized plant—one producing a million barrels of cement a year and employing not more than 300 people altogether—must normally employ 60 people in its sacking and loading department.

PORTLAND CEMENT ASSOCIATION

A National Organization
to Improve and Extend the Uses of Concrete

Atlanta	Des Moines		Parkersburg	San Francisco
Boston	Detroit	Los Angeles	Philadelphia	Seattle
Chicago	Helena	Milwaukee	Pittsburgh	St. Louis
Dallas	Indianapolis	Minneapolis	Portland, Oreg.	Vancouver, B. C.
Denver	Kansas City	New York	Salt Lake City	Washington, D. C.

13,000 Holes Drilled—4 per Minute!

HERE'S a Little Giant Air Drill with a record of 13,000 holes 7/16", 11/32" and 13/32" in diameter, drilled through ¼-inch close-grained, tough, heat-treated metal, *averaging 4 holes per minute!* This average includes two changes of drill sizes.

Ask Harry Merritt, the skilled operator at this drill, why he uses a Little Giant. "Its stay-ability, fast-cutting speed and giant drilling power help make a bigger bonus" will be his reply.

Heard about the new Little Giant feature—the patented Vent Tube? Saves $90.70 annually. Makes lubrication necessary only *once weekly*. Know all about it. Address nearest Branch for details.

Although this Little Giant has been in continuous service at the plant of the General Motors Company, Pontiac, Michigan, for over a year, no repairs have been necessary.

Such speed and endurance records demonstrate the fact that Little Giants *can and will lower drilling costs in your plant.* Secure a trial Little Giant from the nearest Branch. Meantime, ask for Bulletin 598.

Chicago Pneumatic Tool Company

Chicago Pneumatic Building · 6 East 44th Street · New York

*Sales and *Service Branches all over the world*

*Birmingham *Boston *Chicago *Cincinnati *Cleveland *Detroit El Paso Erie Franklin Houston Joplin *Los Angeles Milwaukee *Minneapolis *New Orleans *New York *Philadelphia *Pittsburgh Richmond Salt Lake City *San Francisco *Seattle *St. Louis Basle *Berlin Bombay Brussels *Buenos Aires Christiania *Fraserburgh Havana Helsingfors Honolulu Johannesburg *London Manila Milan *Montreal *Montevideo Osaka Paris Rio de Janeiro Rotterdam Santiago *São Paulo Seoul Shanghai Tampico Tientsin Tokyo *Toronto *Vancouver *Winnipeg

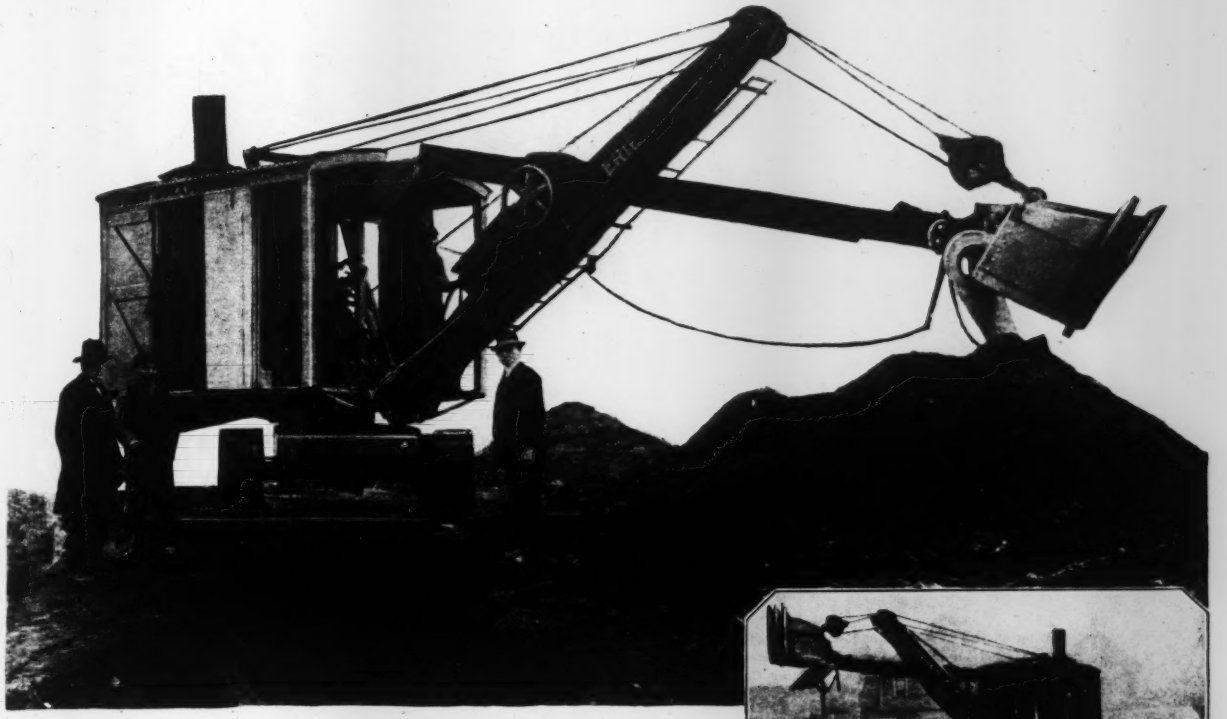
P-162

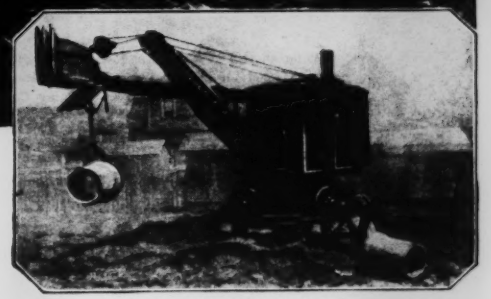
BOYER PNEUMATIC HAMMERS · LITTLE GIANT PNEUMATIC AND ELECTRIC TOOLS
CHICAGO PNEUMATIC AIR COMPRESSORS · VACUUM PUMPS · PNEUMATIC HOISTS
GIANT OIL AND GAS ENGINES · ROCK DRILLS · COAL DRILLS

LITTLE GIANT

The World's Standard — *Air Drill*

CHICAGO PNEUMATIC





"Our 13-ton 'A' ERIE

did the excavating, laid the pipe, and backfilled

on this storm sewer contract,"—

Sweeney Bros., Scranton, Pa.

"While we dug ahead a short distance with the ERIE, the men prepared the trench for the pipe right behind the shovel. We would then swing the ERIE around to lay the pipe, which the men promptly jointed. Then the ERIE continued digging, dumping the excavated material upon the pipe laid. We got very satisfactory results with but very few men for the entire operation."— Sweeney Bros., Contractors, Scranton, Pa. (Owners of 5 ERIES).

As another contractor expresses it: "We have found that the ERIE is the best all-around trenching machine on the market."— Austin B. Cable, Pres., The Cable Co., Canton, O. (Owners of 5 ERIES).

If you have trench work, cellar work, road grading— it will pay you to investigate the "A" ERIE. It is economical in first cost and operating cost; for work in its class, it has many advantages over a heavier machine. *Write us for full information.*

ERIE STEAM SHOVEL CO., Erie, Pa., U. S. A.

Incorporated 1883. Formerly BALL ENGINE CO.

Builders of ERIE Steam Shovels, Locomotive Cranes, Railway Ditchers

Branch Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago

Representatives throughout the U. S. A.

ERIE Revolving Shovels

In order to handle all three operations as the machine goes along—digging the trench, laying the pipe and backfilling— you have to move the shovel over the excavated trench. When you strike soft and crumbly material like that shown in these two photos, you are mighty lucky if you have an "A" ERIE, weighing only 13 tons. The light weight prevents cave-ins and saves a lot of trouble. And the "A" has plenty of power for digging trench through stiff clay; easily handles large boulders.

For maximum output, or unusually hard digging, use the "B"

In material like hard shale, stiff clay or hardpan, the 20-ton "B" ERIE gives excellent output. Used for quarry work, cellars, coal stripping, road grading, as well as trench work.

For very deep trench or wide ditch digging—

either the 13-ton "A" ERIE or the 20-ton "B" ERIE can be easily and quickly changed over to a locomotive crane to handle a clamshell bucket. Also gives excellent results handling a dragline bucket for digging drainage ditches, dredging, etc.

Ransome mixed the concrete

A letter received by Stone & Webster, as constructors, on completion of the great Baltimore Refinery of The American Sugar Refining Company pictured below

STONE & WEBSTER
Incorporated

The **American Sugar Refining Company**
117 Wall Street

New York June 9, 1922
File 2018

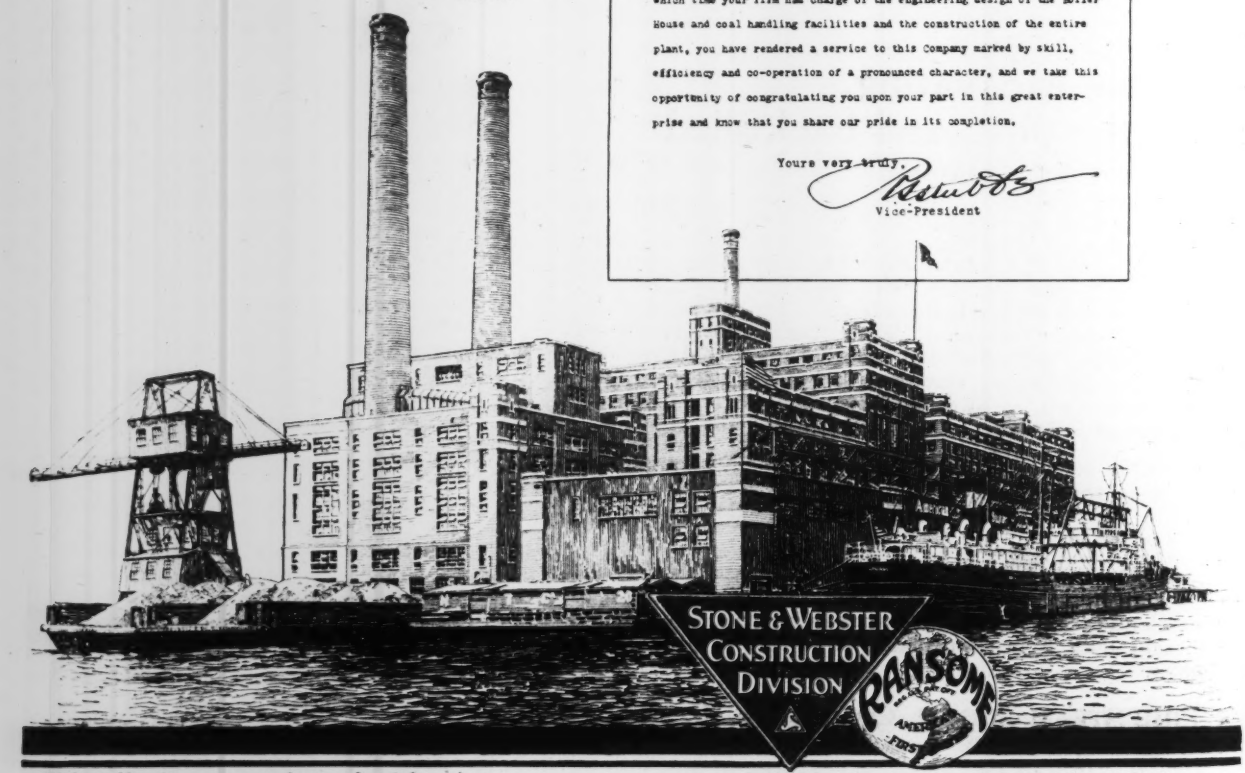
Stone & Webster, Inc.,
147 Milk Street,
Boston, Mass.

Gentlemen:-

The completion of our new refinery at Baltimore establishes the latest link in our chain of plant service which extends from our refinery in New Orleans to Baltimore, through Philadelphia and New York to Boston. The labor of construction is over and the wheels of production are turning.

Throughout the construction period of two years, during which time your firm had charge of the engineering design of the Boiler House and coal handling facilities and the construction of the entire plant, you have rendered a service to this Company marked by skill, efficiency and co-operation of a pronounced character, and we take this opportunity of congratulating you upon your part in this great enterprise and know that you share our pride in its completion.

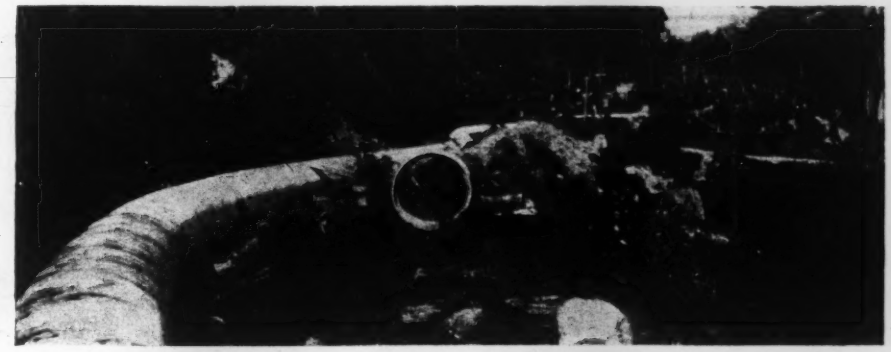
Yours very truly,
Vice-President



Without obligation on my part, please send me information on:—
Building Mixers, sizes 4-S__; 7-S__; 10-S__; 14-S__; 21-S__; 28-S__; 56-S__. Driven by Belt__, Steam__, Gasoline__, Electric__
Paving Mixers, sizes 7-E__; 10-E__; 14-E__; 21-E__. Concrete Chuting Plant for structure__ft. long by__ft. wide by__ft. high.

*NAME*_____ *ADDRESS*_____ 4480

RANSOME CONCRETE MACHINERY CO.
1750 Second Street, Dunellen, N. J.



THE old year flickers out, the new one flashes up, but

LOCK JOINT
Reinforced
Concrete Pipe

knows no passage of years. It has the permanence and the tightness which Reinforced Concrete and "Lock-Joints" alone can give.

A Happy New Year!

Pressure and Subaqueous Pipes

Lock Joint Pipe Co.
Ampere, N. J.

Culvert and Sewer Pipes

"Every Joint a Lock Joint"

Every Marion Revolving Shovel can be changed into orange peel or clamshell crane, or dragline excavator. Attachments are interchangeable and can be easily added in the field.

Are You Satisfied—
With Your Present Operating Costs?

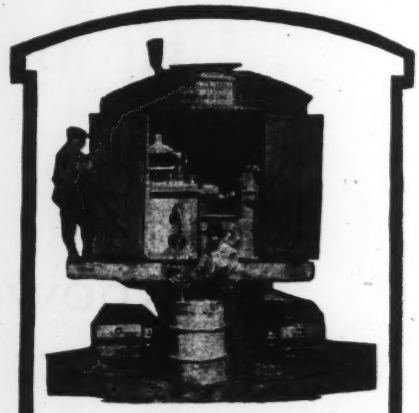
Perhaps you are—but yet your shovel operations maybe costing far more than they should. To make sure, check your records with the cost data we have compiled on our new electric and gasoline-electric shovels.

One owner writes that he saved from $12.00 to $15.00 a day on a grading job—another tells us his total daily cost **for both labor and fuel** was $14.50 (just about the cost of the operator and fireman on a steam machine) —still another says the additional operating time each day increased his output fifteen percent, there being no time lost coaling up or waiting on steam.

Such savings as these are easily possible with Marion Electrics and Gasoline-Electrics. When you buy one of these shovels you get a decidedly practical and efficient machine—one that will make you **more** money than any other shovel of similar size and type now on the market.

Consider the Many Advantages of This New Type

Less fire risk.
No fireman required.
No boiler feed water to supply.
Fast and flexible as a steam shovel.
Will do anything a steam shovel can do.
Can be operated at less cost.
Engine cannot be stalled.
No complicated and sensitive frictions to adjust.
Can be handled by any operator familiar with a steam shovel.



Taking on Fuel

On a Marion Gasoline-Electric this requires only a few minutes time. Supply tank is located under the engine and holds sufficient gasoline for a full day's run. Compare this with the "coaling up" of a steam machine, especially in wet and muddy places or in isolated localities far from the source of fuel supply.

Marion Electric and Gasoline-Electric Shovels are fully described in Bulletin A-301

Request from you will bring a copy promptly.

265

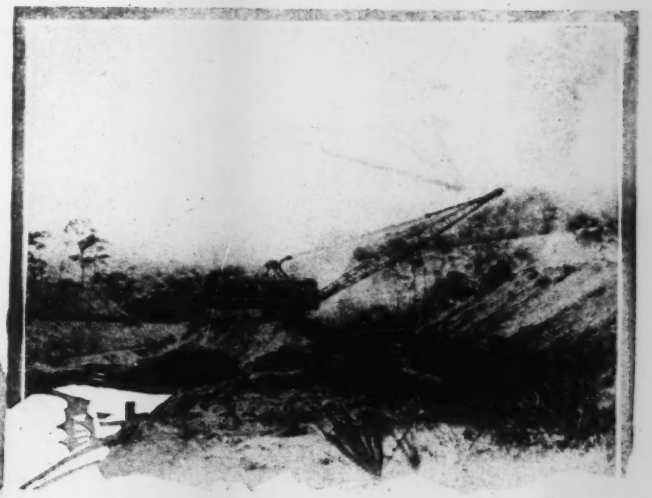
The Marion Steam Shovel Company
Marion Ohio.

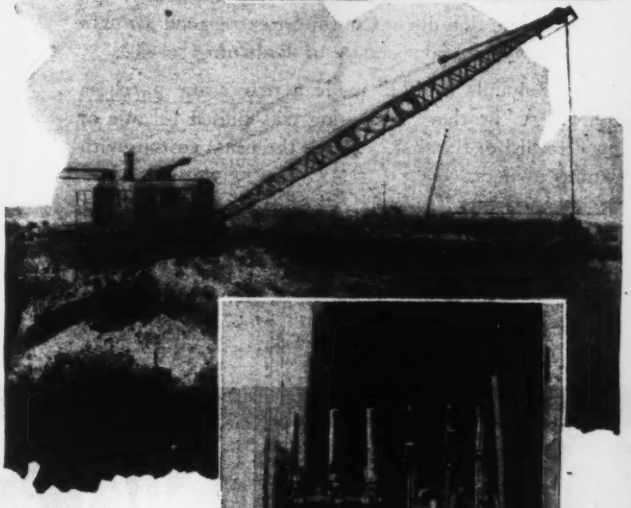
Marion Crawler Trucks Make Hard Going Easy

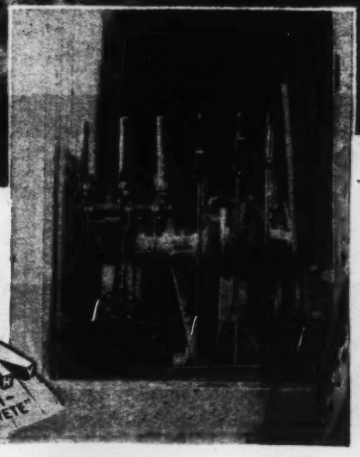
Austin Draglines have been developed from the Contractor's View-Point of a Practical Machine

AUSTIN MANUFACTURES

CUBE MIXERS
CUBE-HEX PAVERS
CONCRETE TAMPERS
GASOLINE LOCOMOTIVES
WAGON LOADERS
TRUCK TURNTABLES
TRENCH MACHINES
WHEEL EXCAVATORS
BACKFILLERS
DRAGLINES
CLAMSHELLS
CRANES
SHOVELS
SKIMMERS
ASPHALT PLANTS







The completeness of design makes Austin draglines an asset.

Aside from the variation in weight of the machines, which is due to increased size of parts, the design of all Austin Draglines is standard.

The standardization of design has been brought about through repeated successful operation of machines on the job.

They are fast and smooth in operation.

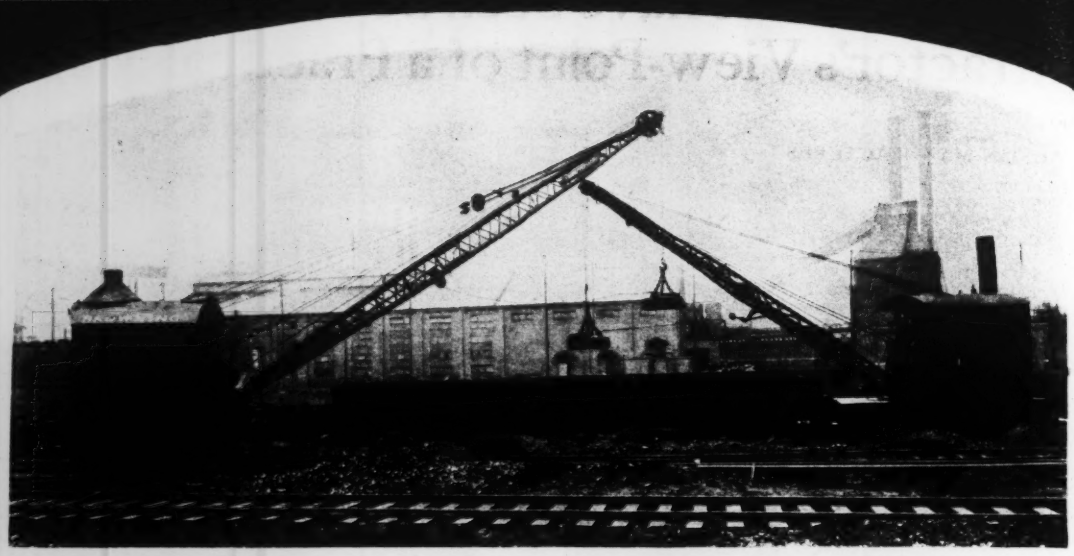
The graduated valve, air or steam control, on sizes No. 6 and larger, increases their handling efficiency—as well as the yardage production.

Write for Catalog DL-103-8

SEE OUR EXHIBIT AT THE GOOD ROADS SHOW

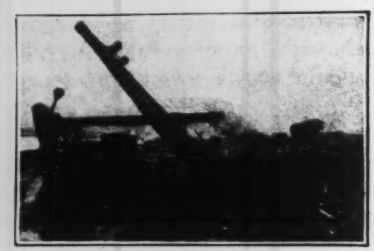
AUSTIN MACHINERY CORPORATION
3500 Dorr Street
TOLEDO, OHIO

Chicago
Birmingham
Davenport
Milwaukee
Minneapolis
New Orleans
New York
Philadelphia
Woodstock, Ont.
Omaha
Pittsburgh
Portland
San Francisco



Two Brownings now in use at Struthers, Ohio. The one on the right was purchased in 1906, the one on the left in 1922.

Browning Cranes are particularly adapted and famous for their all-around usefulness on construction work.



Browning equipped with steam shovel attachment. Note the clear height from the ground level to the bottom of the dipper door.

16 Years Old and still on the job

N MARCH 1906, over 16 years ago, The Struthers Furnace Company, Struthers, Ohio, purchased their first Browning.

Worked to maximum capacity in war time and periods of prosperity, but nevertheless always finding plenty to do in periods of depression, because of its versatility, this Browning is still on the job and serving faithfully. A performance like this doesn't mean an extra good Browning—it's simply a good example of Browning service.

Increased demands in 1922 made a new crane purchase necessary. A "brother" Browning was chosen because of the good record of the first. That's the usual custom with Browning owners.

Send for the complete Browning Catalog.

THE BROWNING COMPANY

Cleveland, Ohio, U. S. A.

New York Chicago Seattle Portland Salt Lake City Los Angeles San Francisco Montreal Washington, D. C. Birmingham

BROWNING
LOCOMOTIVE CRANES

The Haiss Bucket

We publish a **Bulletin** (No. 719) that tells you all about Haiss Bucket Design—we don't want to stop to tell you here. We want to say to you that *a Haiss Bucket will do more work* than other buckets of similar capacity—and that we stand ready to prove it.

Are you interested in Clamshell Buckets that do more work?

Haiss "Contractor" Type—For Re-Handling

Haiss "High Power" Type—For Digging and Excavating

Buying a Bucket

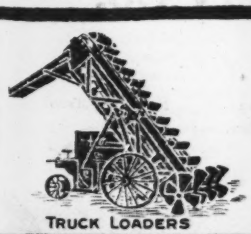
You don't buy a bucket for what it will do the first *day*—you buy a bucket for what it will do the first *year*.

A good bucket has more to it than proper shape and closing power—it must have "guts," an inelegant term, but the one that most strongly pictures the reason why Haiss Buckets have the call.

You may never have compared the weight of the plate in bucket bowls. You may never have compared the value of the "clear around" Haiss cutting shoe with other construction, or the cast-steel blade arms and bowl braces—the man who uses Haiss Buckets may not have studied out the "why" of it, but he knows that they do deliver the goods; they stay on the job.

The George Haiss Mfg. Co., Inc. 140th Street and Rider Avenue, N. Y.

ESTABLISHED 1892 Millars' Timber & Trading Co., London, British Representative Representatives Throughout the World



TRUCK LOADERS

HAISS

MATERIALS HANDLING EQUIPMENT

CLAM SHELL BUCKETS

PORTABLE BELT CONVEYORS

They Stand the Gaff!

A-W GRADERS are built to last, and the large number of 20- and even 30-year-old machines still in active service testifies that they do. No matter what your requirements, there is a model somewhere between the 1000-pound Midget and the 10,500-pound No. 20 that will meet them perfectly.

A distinctive feature of the line is the wide range of adjustments found on all of its members. Take the above photograph as an illustration. How many other graders could cut such a perfect back slope without the use of a special back sloper attachment?

It Was Easy for This Austin Mammoth!

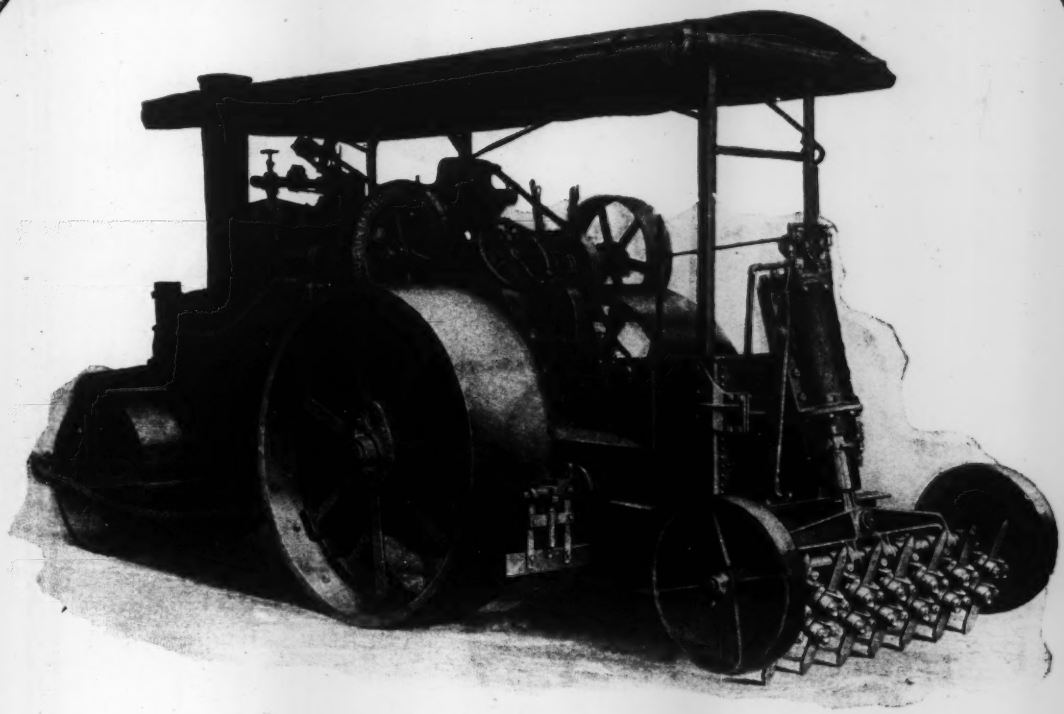
"Signs of Better Roads," our latest catalog, illustrates and describes the entire A-W line of road-making and maintenance machinery. Ask us for a copy.

The Austin-Western Road Machinery Co.

CHICAGO, ILLINOIS

Branch Warehouses and Service Stations:

Albany	Dallas	Kansas City, Mo.	Nashville	Philadelphia	San Francisco
Atlanta	Denver	Little Rock	New Orleans	Portland, Ore.	St. Paul
Billings	Fargo	Los Angeles	New York City	Richmond	Wahoo, Neb.
Columbus	Jackson, Miss.	Louisville	Oklahoma City	Salt Lake City	



SCARIFYING
with an Austin Steamer

We could fill a dozen pages with a detailed description of the construction and operating features of the Austin Steam Roller, and not impress you half so much as you would be impressed by a brief demonstration of this machine on difficult work such as scarifying.

When we speak of an increase of 20% in boiler heating surface, you are interested, especially if you know through sad experience how badly something of the sort is needed; but when you actually see a machine on the job—see how it buckles down to the hardest tasks, not for a few moments only, but hour after hour and day after day—then you are convinced that we hit the mark when we aimed to build

THE WORLD'S BEST STEAM ROLLER

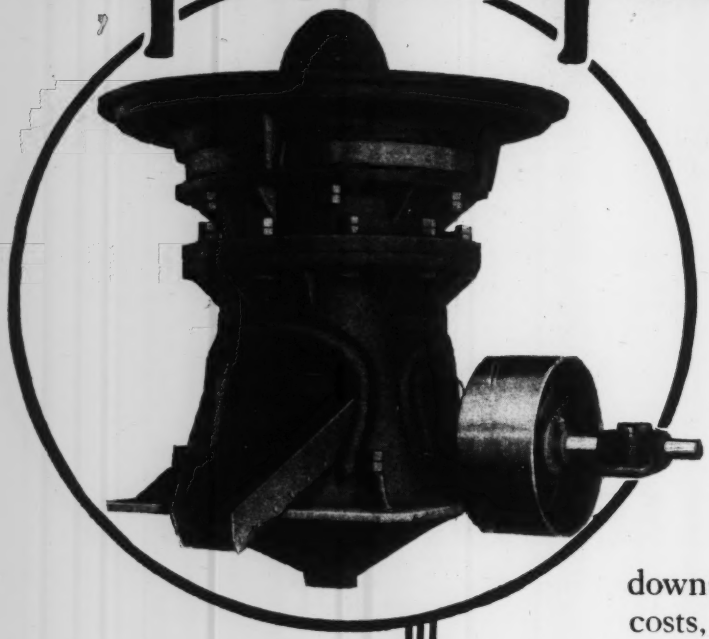
Write for a copy of Catalog F-H.
It's the next best thing to a demonstration.

The Austin-Western Line

"It Serves You Right"

AUSTIN		WESTERN	
Motor Rollers	Elevating Graders	Rock Crushers	Wheeled Scrapers
Steam Rollers	Dump Wagons	Crushing Plants	Drag Scrapers
Tandem Rollers	Motor Sweepers	Screening Plants	Fresno Scrapers
Roller-Scarifiers	Street Sweepers	Reversible Road Graders	Tongue Scrapers
Reversible Road Graders	Street Sprinklers	Grader-Scarifiers	Grading & Rooter Plows
Grader-Scarifiers	Sprinkler-Sweepers	Road Scarifiers	Ditchers
Road Scarifiers	Road Oilers	Road Planers	Back Slopers
Gyratory Rock Crushers	Road Planers	Elevating Graders	Road Drags
Crushing Plants	Culverts	Dump Wagons	Dump Cars

Austin Gyratory Crushers



Stationary and Portable Types

are making money for hundreds of owners scattered throughout the country. Exclusive Austin features are responsible for increased production records, greater freedom from shutdowns and lower operating costs, and have made the name "Austin" the symbol of satisfaction in the crusher world.

Catalog 29-H gives complete details. We would like to send you a copy.

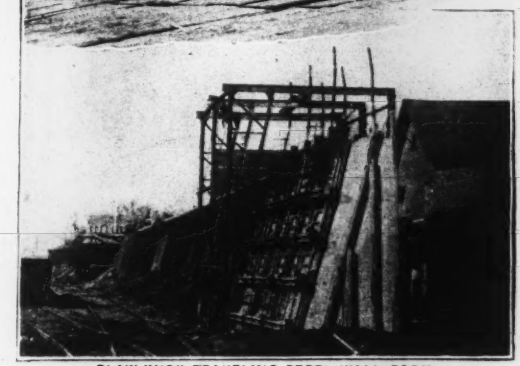
Be sure to see the No. 3 Mounted Gyratory, with feeding conveyor and elevator, in our exhibit at the 14th National Good Roads Show, Chicago, January 15-19.

AUSTIN MANUFACTURING CO.

NEW YORK CHICAGO SAN FRANCISCO

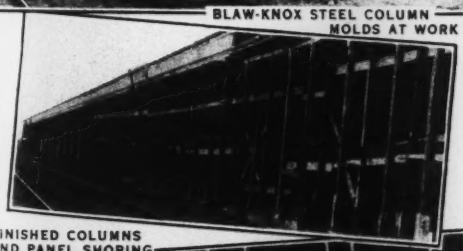
ALMACOA EXPORT DEPARTMENT ALLIED MACHINERY COMPANY OF AMERICA 51 Chambers St., New York, U.S.A. Cables: Almacoa New York ALMACOA

PARTIALLY COMPLETED VIEW.
D. L. & W. ELEVATION—BRICK CHURCH STATION.
EAST ORANGE, N. J. BLAW-KNOX COLUMN
FORMS USED TO FORM THESE COLUMNS



BLAW-KNOX TRAVELING STEEL WALL FORM
USED ON CONCRETE VIADUCT—D. L. & W. ELEVATION

BLAW-KNOX STEEL COLUMN
MOLDS AT WORK



FINISHED COLUMNS
AND PANEL SHORING

H. F. Curtis: Blaw-Knox Steel Forms Show a 50% Saving

H. F. Curtis is using Blaw-Knox Steel Forms on the D. L. & W. elevation work at East Orange, N. J. This includes the construction of retaining walls and a concrete viaduct 75 ft. wide, 1,080 ft. long, supported by 230 round concrete columns. The long experience of Mr. Curtis in connection with engineering achievements of this character renders his opinion of special value. He says—

> *"On the above work I have and am still using the Blaw System of Steel Forms and by the use of these forms I have effected a saving over wood forms which I have used on previous work of this nature. I might add that the use of steel forms on my work has made a saving of 50% over wood forms."*

Mr. Curtis is enthusiastic about Blawforms because they prove their practical value and saving at every turn. Blaw-Knox Form Engineers will develop forms for you and prove their savings conclusively.

There is no job too big or too complicated for Blawforms to handle. Write for our catalog illustrating the work Blawforms have done.

BLAW-KNOX
ROAD BUILDER'S EQUIPMENT
STEEL FORMS FOR CONCRETE
SECTIONAL STEEL BUILDINGS
CLAMSHELL BUCKETS
STRUCTURAL STEEL PLATE WORK
TRANSMISSION TOWERS
WATER COOLED FURNACE APPLIANCES
FORGE AND HAMMER WELDING

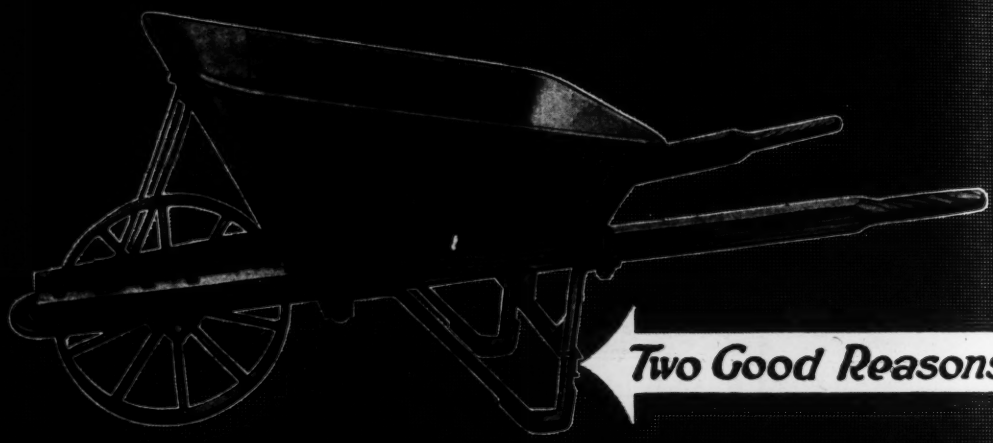
BLAW-KNOX COMPANY

PITTSBURGH, PA.
601 Farmers Bank Bldg.

New York-Chicago-Detroit-Baltimore
Birmingham-San Francisco-London, Eng.

Sterling

They are Cheaper because they Last Longer—



Two Good Reasons

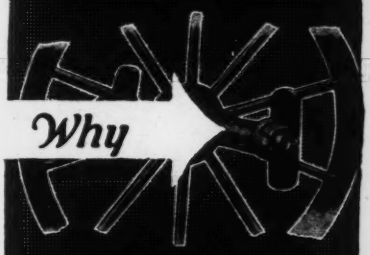
The longer and harder the service, the better Sterling Wheelbarrows show by comparison.

Ask the man who pushes one!

Sterling Wheelbarrow Company

MORE THAN STERLING ON SILVER Sterling

– more Efficient because they Wheel Easier.



Wheels 50% Easier.

SAVE TROUBLE

Good wheelbarrows eliminate troubles on a building job, where poor ones cause plenty of extra grief, delay and expense.

Self-Lubricating Wheels
Riveted Legs

Two good reasons why Sterling Wheelbarrows stand up well under all conditions. Yes, and there are many more exclusive improvements which make "Sterling" a safe investment and give you real wheelbarrow efficiency.

Write for the Sterling Catalog

Sterling Wheelbarrow Company

Yardage, remember—
first goes into the mixer!

The charging skip on a concrete mixer starts with heavy load from dead weight and elevates at high speed. Terrific strains throughout the mixer, unless the frame and super structure have heavy duty construction. Less strain on the Koehring because the Koehring skip cables get a more perpendicular "pull"—and the Koehring skip goes to the high charging angle that shoots material into the drum in a swift, clean slide, without need for pounding skip against the frame.

Koehring Heavy Duty Construction matches the operating speed of the Koehring paver—the fastest paving unit.

Capacities:

Construction Mixers: 10, 14, 21, 28 cu. ft. mixed concrete. Write for Catalog C—8.

Pavers: 7 10, 14, 21, 32 cu ft. mixed concrete. Write for Catalog P—8.

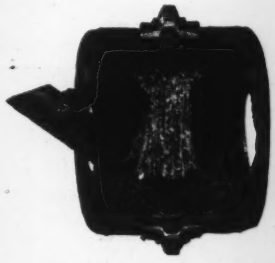
Dandie: Light mixer, 4 and 7 cu ft. mixed concrete; power charging skip, or low charging platform. Light duty hoist. Write for Catalog D—8.

KOEHRING HEAVY DUTY

KOEHRING COMPANY
MILWAUKEE. WISCONSIN

Foreign Department, Room 1370, 50 Church Street, New York City. Canada, Koehring Company of Canada, Limited, 105 Front Street, East Toronto, Ontario. Mexico, F. S. Lapuna Cinco de Mayo 21, Mexico, D. F.

SMITH MIXERS



Good Concrete and Speed

Users of Smith Mixers make speed because the aggregate when dumped into the drum is properly taken care of by the revolving buckets, and the "end-to-center" mixing action keeps the mix where it should be.

Also, many contractors have standardized on Smith Mixers, their working crews becoming more expert and efficient, and requiring less supervision,—both of which mean better coordination and steadier concrete production. Ample reserve is provided in the Smith power plant.

Confidence

The confidence the public has in the strength of concrete structures—foundations, bridges, dams, etc.,—is really a blind confidence.

But the confidence the construction man has is to a great extent a result of his knowledge of the permanent concrete mixed in his Smith Mixers.

Construction men are aware of the responsibilities they are shouldering,—hence the desire to be sure of the best concrete mixing on their contracts.

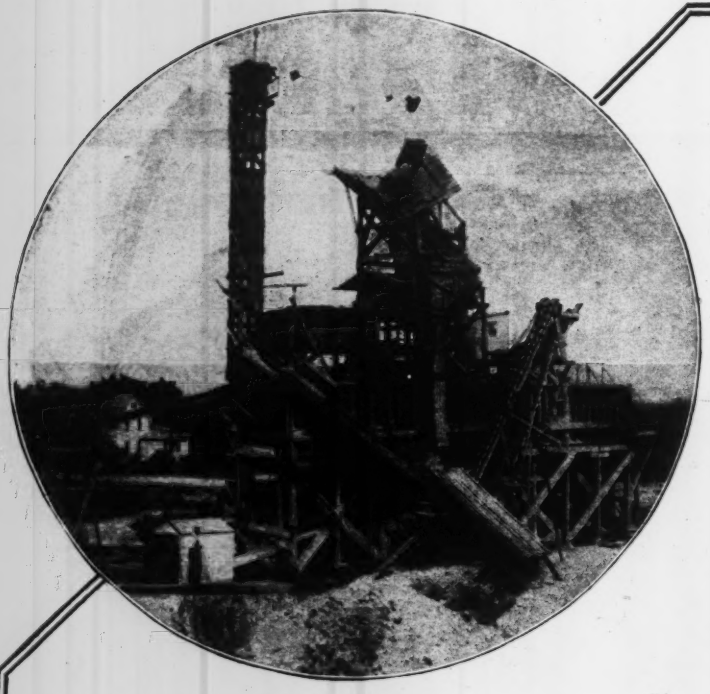
Smith Mixers are made for the smallest and largest jobs. In all, the design insures thorough mixing.

THE T. L. SMITH COMPANY

1154 32nd Street, Milwaukee, Wis.

New York Office and Warehouse: 50 Church St.
Chicago Office: Old Colony Bldg.
Western Warehouse: Oakland, Calif.

Agents in Principal Cities.



Telsmith Solves a Gravel-Washing Problem

A little story illustrating the value of reliable engineering counsel in designing gravel handling plants.

In 1920, the City of Red Wing, Minnesota, owned a gravel pit, equipped with quite a large storage bin, a good drag-line outfit, a worn-out jaw crusher and a totally inadequate dry-screening plant. Mr. William Geisheker, city engineer, consulted the Telsmith agent in St. Paul. Mr. Geisheker furnished a drawing of this plant as it stood; and Telsmith engineers prepared plans and specifications for the re-construction of the plant. To secure an output of 20 cu. yds. of washed gravel per hour, the following new equipment was recommended:

Telsmith Primary Breaker, No. 3 size, manganese equipped;
Telsmith Plate Feeder, 16 in. x 5 ft.;
Telsmith Heavy Duty Washing Screen, 32 in. dia. by 12 ft. long;
Telsmith Sand Tank, No. 5 size.

It's a mean job to revamp an old plant, rectifying the errors in an earlier design—to sort out the good material from that which is worthless and fit in new machinery into an old structure. Telsmith did the job well. The Red Wing plant has now been operating for two years. It has produced excellent results under difficult conditions.

We don't yearn for "patch jobs," but we cite this one just to illustrate what Telsmith can do when necessary. Good machinery plus a thorough knowledge of gravel plant practise—that's a hard combination to beat. We are here to serve you—to furnish you modern machinery and reliable engineering counsel. Glad to send you our Catalog No. G-P-1 (Gravel Pit equipment) and Bulletin No. 155 (Telsmith Crushers). No obligation.

SMITH ENGINEERING WORKS

3198 LOCUST ST., MILWAUKEE, WIS.

Canadian Representatives: Canadian Ingersoll-Rand Co., Montreal, P. Q.

Old Colony Bldg., Chicago, Ill.	261 Franklin St., Boston, Mass.	H. G. Mueller Co., Birmingham, Ala.	Bunting Hardware Co., Kansas City, Mo.	Salt Lake Hardware Co., Salt Lake City, Utah
50 Church St., New York City	110 W. Park Way, N. S., Pittsburgh, Pa.	Franklin and Channing Aves., St. Louis, Mo.	523 Boston Bldg., Denver, Colo.	Brown-Bevis Co., Los Angeles, Calif.
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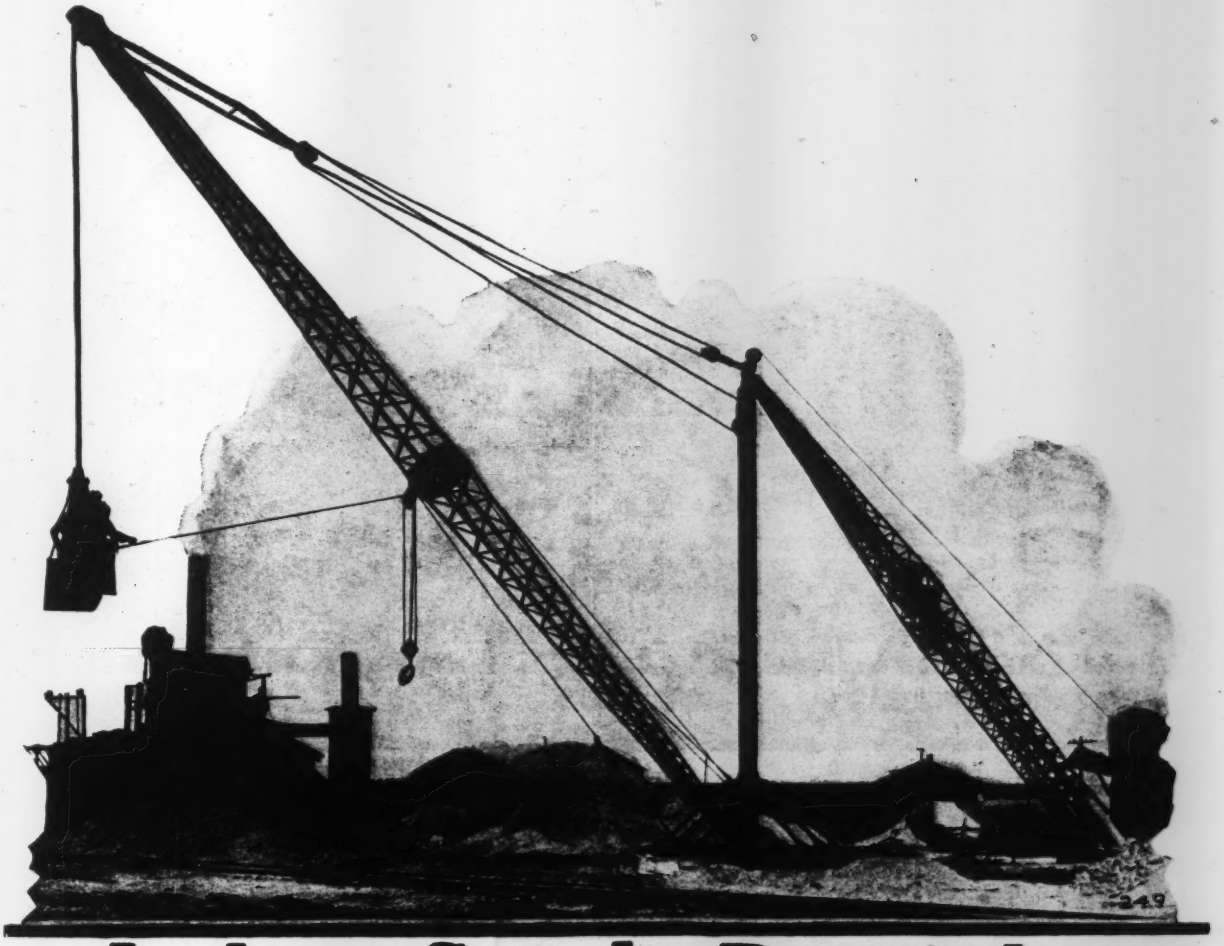


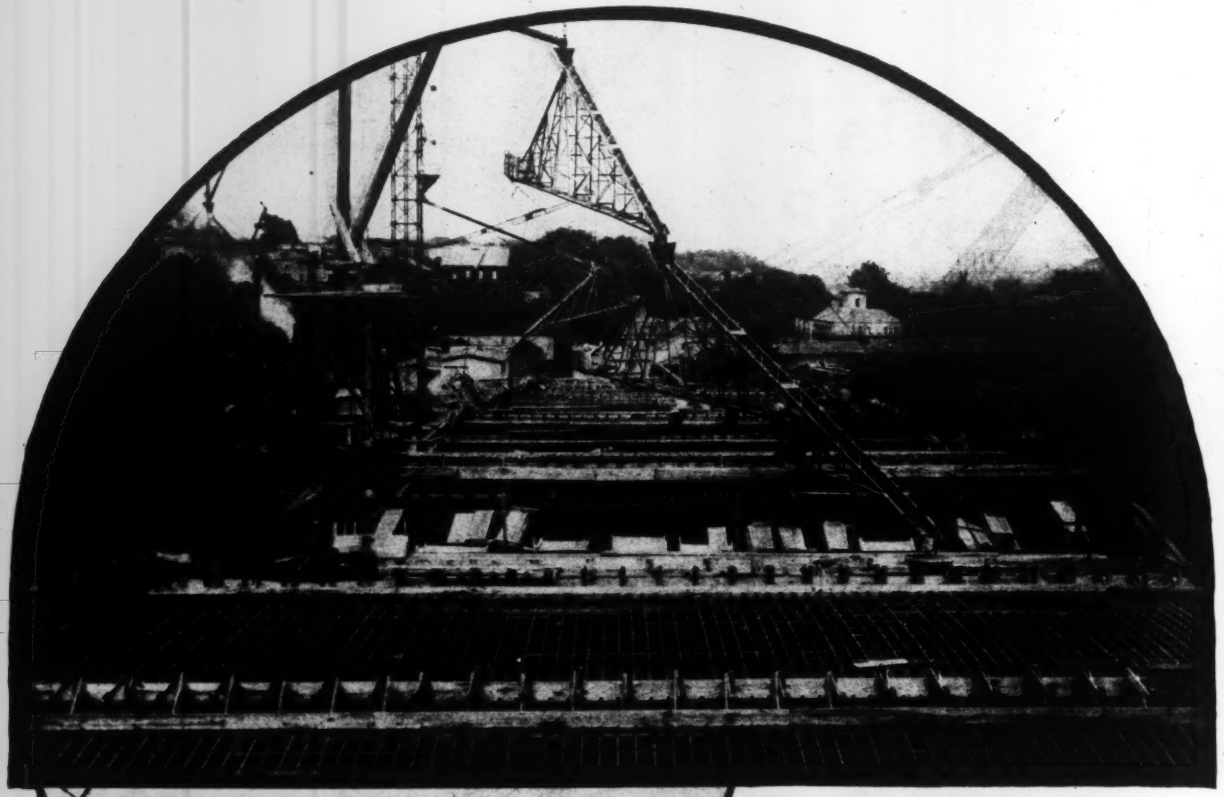
Insley Steel Derricks

INSLEY DERRICKS are especially designed for use in the construction field, all details having been worked with the requirements of this class of service in view. Their strength of parts and rigidity of members make possible a speed of operation that will be a revelation to derrick users.

In addition to increased operating efficiency, the Steel Derrick is a money saving item of equipment as compared with the wood derrick, owing to the facility with which it can be moved from one job to another. No single section is over 40 ft. in length.

Write for Catalogue No. 43

INSLEY MANUFACTURING CO.
Engineers and Manufacturers
INDIANAPOLIS



Courtesy, Rogers & Hagerty, Inc., Contractors

Bethlehem Reinforcing Bars on "Hill to Hill Bridge," Bethlehem, Pa.

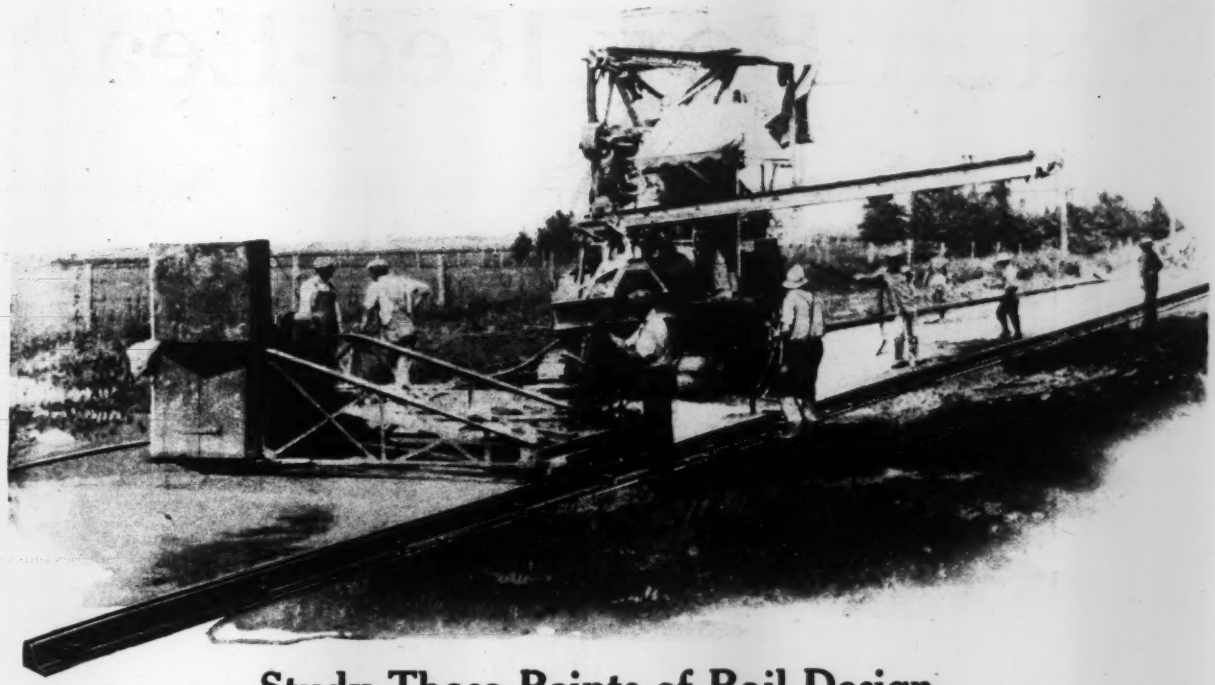
Bethlehem Reinforcing Bars *for* Concrete Construction

BETHLEHEM STEEL COMPANY—*General Offices:* BETHLEHEM, PA.

Sales Offices:

New York Boston Philadelphia Baltimore Washington Atlanta Pittsburgh
Buffalo Cleveland Detroit Chicago St. Louis San Francisco

BETHLEHEM



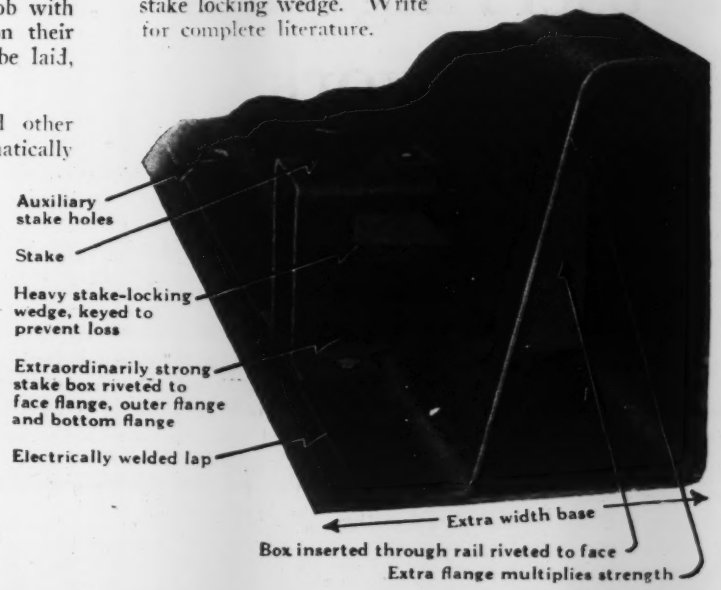
Study These Points of Rail Design

DOMINANT strength—sturdiness adequate to the most punishing work—came to the road rail field with Metaform. The tube-like, continuous web construction of Metaform Road Rails offers not merely increased strength, but old-type strength literally multiplied.

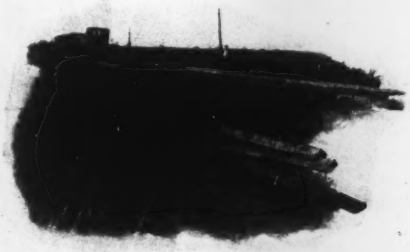
Metaform superiority rests not alone on the ability of these rails to come through job after job with absolutely no sign of deterioration—but on their handiness, the speed with which they can be laid, aligned and stripped.

Metaform design eliminates pedestals and other jointing devices. But the rail-ends automatically lock into a husky joint that helps make a set-up solid as a railroad track. Rails may be removed instantly, at any point in the set-up, to form side-roads.

Study the points of construction shown below. Note the continuous web—lapped, riveted and welded. The tremendously stout stake box, with non-losable stake locking wedge. Write for complete literature.


Auxiliary stake holes
Stake
Heavy stake-locking wedge, keyed to prevent loss
Extraordinarily strong stake box riveted to face flange, outer flange and bottom flange
Electrically welded lap
Extra width base
Box inserted through rail riveted to face
Extra flange multiplies strength

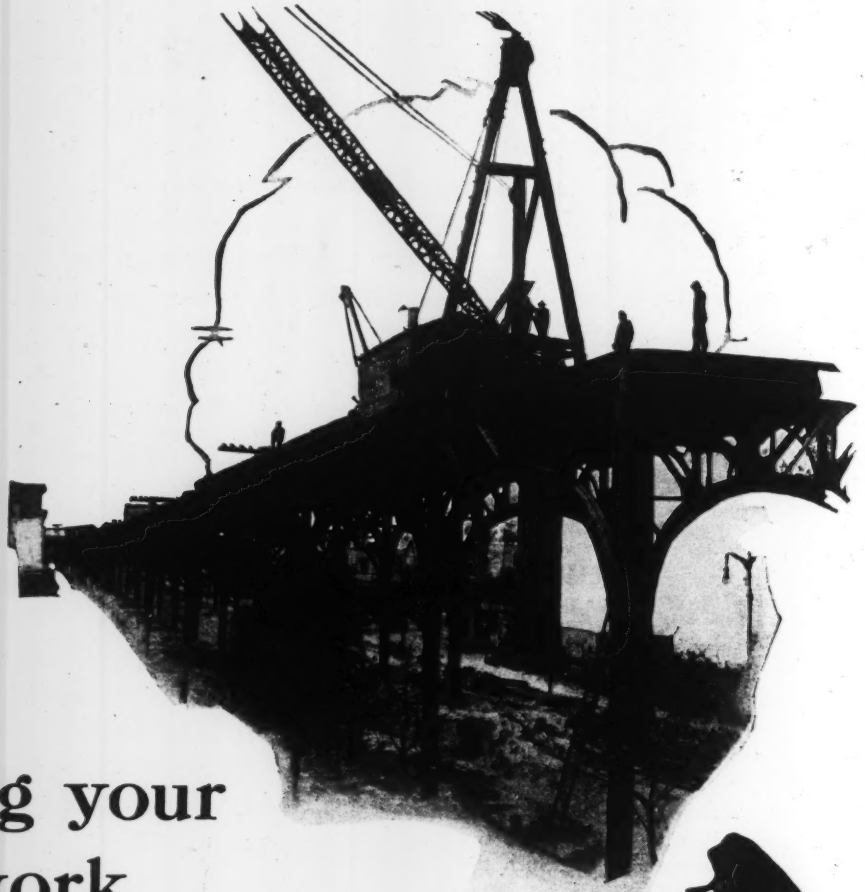
METAL FORMS CORPORATION
1445 Booth St. Milwaukee, Wis.



Sections can be instantly opened for side roads

Metaform Road Rails

Dutch Boy Red-Lead



Preserving your steelwork

Strong and durable as iron and steel are, rust can eat into a big bridge or any such structure and eventually destroy it. But there is a way to prevent rust from eating your steelwork.

Dutch Boy Red-Lead paint prevents metal from rusting. It sticks tight to the surface and keeps out moisture and air. Weather cannot pry it loose. Hard enough to stand all kinds of weather, it also is elastic enough to expand and contract without cracking.

Contact surfaces, joints, rivets, etc., that are concealed after erection need particular attention. Here painting with Dutch Boy Red-Lead in the shop or before erection gives the necessary protection.

Dutch Boy Red-Lead comes both in paste and in liquid form. For priming coats it should be used straight. The liquid is supplied untinted and also tinted black, light and dark green, and light and dark brown. With the paste any dark color desired can be obtained.

Write for Painting Helps No. 5.

NATIONAL LEAD COMPANY

New York	Boston	Chicago	San Francisco
Cleveland	Buffalo	Cincinnati	St. Louis

JOHN T. LEWIS & BROS. CO., Philadelphia NATIONAL LEAD & OIL CO., Pittsburgh

CHICAGO

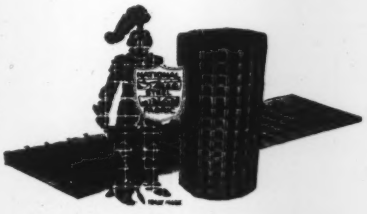
JANUARY 15-19, 1923 **ROAD SHOW** **JANUARY 15-19, 1923**

We extend you a cordial invitation to visit with our district managers at Booth 12-39, on the Second Floor Balcony of the Coliseum.

Messrs. Harry Beaton of Philadelphia, Charles Dugan of Chicago, Harry Gibboney of Atlanta, and one or two men from the home office will be present to welcome you.

All of them will do everything possible to make your trip pleasant and profitable. If there is anyway in which they can serve you, do not hesitate to call upon them.

Until the 15th, then.



Furnished in Rolls or Sheets

National Steel Fabric Company

(Subsidiary of Pittsburgh Steel Company)

700 Union Arcade, Pittsburgh, Pa.

ATLANTA, CHICAGO, CLEVELAND, DENVER, DETROIT, LOS ANGELES
MINNEAPOLIS, NEW YORK, PHILADELPHIA, ST. LOUIS
SAN ANTONIO, SAN FRANCISCO

World's Largest Manufacturers of Welded Steel Fabric

NATIONAL STEEL FABRIC CO

Subsidiary of PITTSBURGH STEEL Co

UNION ARCADE BUILDING PITTSBURGH, U.S.A

KEYSTONE COPPER STEEL

The Testimony of a Decade

Time will tell—*it has told!* Ten years have now elapsed since Keystone Copper Steel was first offered to the trades as possessing unexcelled *rust-resistance.* Our original claims for this Copper Steel alloy have been fully substantiated—and the years continue to add to the weight of evidence.

KEYSTONE COPPER STEEL

Through the exhaustive efforts of this Company, the enduring qualities of Sheets and Tin Plates for roofing, sheet metal work and kindred uses have been greatly improved. Keystone quality has been a remarkable success, because it has demonstrated its merit and superiority in actual service. It is more durable—and economical.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis

Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City

Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle

KEYSTONE COPPER STEEL

THE ACHIEVEMENT of alloying steel with copper to increase its *resistance to rust*, is a most important one. Copper puts into Sheet Steel a new measure of permanence that cannot be obtained without its help. The proof is positive and impartial—the result of time and weather exposure.

Your District Sales Office will be pleased to supply this booklet.

Send for new set of Weight Cards and Apollo Calendar.

We have assembled in a brief booklet a few of the outstanding facts showing the superiority of Copper Steel, together with opinions of eminent authorities, official photograph of weather tests, and graphic chart showing corrosion losses of steel and iron sheets. This booklet is of particular interest to engineers, contractors, and users of sheet metal—and will be gladly sent upon request.

This Company is pleased to assist you in the solution of your sheet metal problems. Our large group of modern plants provide extensive facilities, and with these we combine an able and skilled personnel of long experience, whose earnest desire is to serve you well—and supply products that render the full measure of satisfaction.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

MANUFACTURERS OF

Sheet and Tin Mill Products for all purposes—Black Sheets, Galvanized Sheets, Tin and Terne Plates, Special Sheets for Stamping Corrugated and Formed Roofing and Siding Materials, Electrical Sheets Wellsville Polished Steel Sheets, Automobile Sheets in all grades, Deep Drawing Sheets, Stove and Range Sheets, Black Plate, Etc.

The Winter Shovel

The Thew gasoline is the winter shovel.

It is just the shovel for those odd jobs that you can pick up this time of year to help keep down your overhead.

It has the same range and flexibility as the Thew steam shovel. Except for gearing to a single source of power it is identical in design and construction.

Of course the continuous tread truck has real power steer and two speeds. The steering is done from the cab.

With the gasoline you will save on fuel and maintenance cost. You won't have to have a night watchman and a fireman. The shovel is always ready for work and easy to run. With the Thew enclosed house, running even in zero weather is not uncomfortable.

The Ambler Davis Company of Philadelphia own this winter shovel. Get their opinion of it.

Or write for your copy of Bulletin 601.

THE THEW SHOVEL COMPANY
LORAIN, OHIO

Thew
Power Shovels

'UNIVERSAL' *the* CAST IRON PIPE that Makes its Own Joints

Resisting Severe Exposure to the Elements

THIRTY miles of Universal Cast Iron Pipe, sizes 2 in. to 12 in., laid by the Key West Gas Company nine years ago is giving perfect satisfaction.

The ability of 'Universal' to give dependable service under unusual conditions is readily appreciated. Consider the 'Universal' line shown above, recently photographed at Key West where the bank washed away in 1919. Despite repeated attacks of heavy seas, this 4-in. Universal Pipe line continues to give uninterrupted service.

Universal Pipe is the ideal pipe for water supply, high pressure fire systems, gas lines and other service where freedom from leakage is paramount.

UNIVERSAL CAST IRON PIPE

no pouring, no calking—bell holes unnecessary

THE CENTRAL FOUNDRY COMPANY

Subsidiary of

IRON PRODUCTS CORPORATION

41 East 42nd St., New York

Sales Offices: New York, Chicago, Birmingham, Dallas, San Francisco

Use IR Portable Compressors

"PAVING BREAKERS" and I-R PORTABLE COMPRESSORS enlarging manhole.

COMPRESSED-AIR operated machinery is being used to a greater extent every day for cutting asphalt, breaking out concrete, drilling rock, sand-blasting, paint spraying, etc. It does the work rapidly and economically, is comfortable to operate and sturdy.

"PAVING BREAKER"—a light, compressed-air operated one-man machine for cutting asphalt, breaking up concrete roads and foundations and general demolition work. The compressed-air method does the work in one-fourth the time and at one-third the cost of hand methods.

"JACKHAMER"—an automatically rotated hammer type rock drill, hand held or mounted and used in all kinds of general rock drilling work. It is operated by one man and is now the standard drill for trench and contract work.

PORTABLE COMPRESSORS—complete air compressor plant consisting of: air compressor, gasoline engine or electric motor, radiator and cooling system, air receiver, etc., all mounted on a substantial all-steel truck with steel wheels and axles.

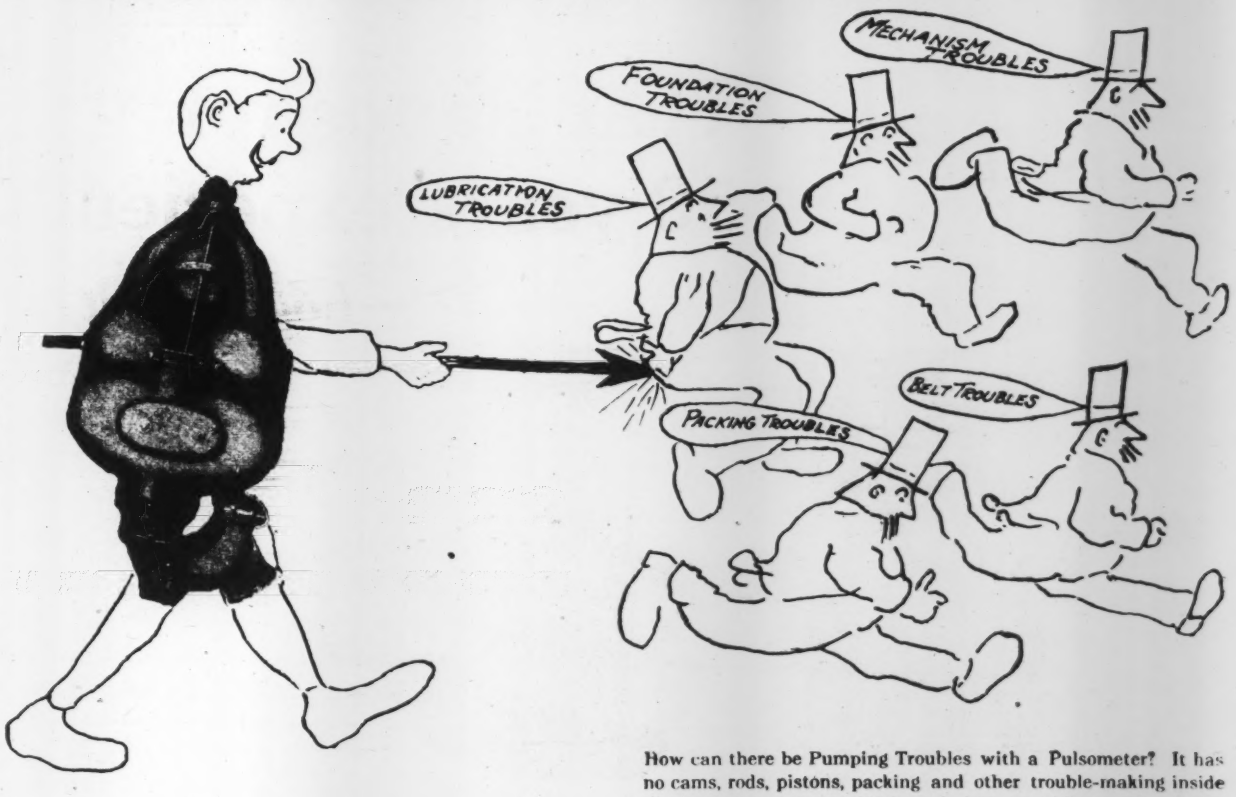
Bulletin No. 4051—"Paving Breaker"
Bulletin No. 4046—"Jackhamers"
Bulletin No. 3315—Portable Compressors

INGERSOLL-RAND COMPANY, 11 Broadway, New York

60-SD

Ingersoll-Rand

The Pulsometer Drives Away Your Pumping Troubles



How can there be Pumping Troubles with a Pulsometer? It has no cams, rods, pistons, packing and other trouble-making inside mechanism to get out of order. It has no sliding parts. It requires no lubrication. It requires no belting. It requires no adjusting, no attention. You do not have to build a foundation. Just hang the Pulsometer on a hook, stick the suction into the water, turn on the steam (exhaust steam will do)—and it will begin pumping and keep it up until it sucks dry.

Note. It's easy to get a Pulsometer. You can rent, lease or buy one. Just get in touch with us.

Get a catalog from us or the agent nearest

Note the small size Steam Pipes.

No.	Sizes of Pipes, Inches: Steam	Suction	Discharge	Gallons Per Minute	Horse Power Boiler	AND NOTE: Weight Pounds
2	¼	1½	1½	25	4	95
3	⅜	2	2	70	5	140
4	½	2½	2½	125	6	295
5	½	3	3	200	9	430
6	¾	3½	3½	350	12	570
7	¾	4	4	450	15	745
8	1	5	5	750	25	1,375
9	1½	7	6	1,100	35	2,100
10	2	8	8	2,200	70	3,800

Note the small Boilers required

PULSOMETER STEAM PUMP

PULSOMETER STEAM PUMP CO.

Executive Offices: 220 West 42nd St., New York City

Agencies in the Following Cities:

Henry H. Meyer Company, 110 S. Howard St. ..... BALTIMORE
Kelly-Derby Co., Inc., People's Gas Bldg. ..... CHICAGO
Beckwith Machinery Co. 1500-02 Lakeside Ave. ..... CLEVELAND
The K. B. Noble Company, 249 Pearl St. ..... HARTFORD, CONN.
J. L. Welburn ..... HATTIESBURG, MISS.
Miller Supply Co. ..... HUNTINGTON, W. VA.
H. A. Paine, 119 Main St. .... HOUSTON, TEX.
Harron, Rickard & McCone, 225 S. San Pedro St. .. LOS ANGELES, CAL.
Hunter Machinery Co., West side of 16th St. Viaduct. MILWAUKEE
Wm. H. Ziegler Company, 423 S. Fifth St. ..... MINNEAPOLIS
Turner Supply Co. ..... MOBILE, ALA.
Carthage Machine Co. ..... CARTHAGE, N. Y.
Woodward Wight & Company, Ltd. NEW ORLEANS
Berow Machinery Co., 220 West 42nd St. ..... NEW YORK CITY
Edelen & Co., 235 Commercial Trust Bldg. PHILADELPHIA
Beckwith Machinery Co., 108 Parkway N. S. ..... PITTSBURGH
Harron, Rickard & McCone, 139 Townsend St. ..... SAN FRANCISCO
J. A. Manior, Henry Bldg. ..... SEATTLE
W. L. Sullivan ..... TULSA, OKLA.
Beckwith Machinery Co. CHARLESTON, W. VA.
Powell Equipment Co., 403 McArthur Bldg. ..... WINNIPEG, CAN.
Harvard Turnbull & Co. Excelsior Life Bldg. ..... TORONTO, CAN.

CHAPMAN

That stands for 50 years' experience

—Look for it!

Sluice Gates With a Pedigree

Any good foundry can produce a sluice gate. Perhaps it will be a *good* sluice gate. But is it worth while to take chances? You must ask yourself whether or not the sluice gates you purchase will simply save you money on *first* cost—or over a long period of years of operation. You must ask yourself whether they have been well designed, whether the workmanship and metals are up to a certain standard of excellence. And in Chapman Sluice Gates all these questions are answered affirmatively—because back of every Chapman Sluice Gate lie 50 years' of experience and reputation. Send for the Chapman Catalog 38—a fine "text book" of fine products.

The Chapman Valve Mfg. Co., Indian Orchard, Mass.

BRANCHES:

New York	Detroit	San Francisco	Boston	Cleveland	Tulsa
Pittsburgh	Chicago	Houston	Philadelphia	Los Angeles	Syracuse

VALVES

The test of actual years of Service has demonstrated

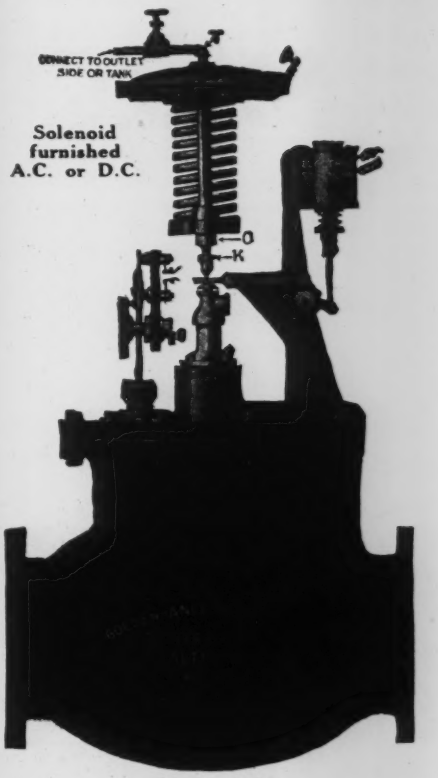
Golden-Anderson

Patented Automatic Cushioned "Stop-Starter Electric" Controlling Altitude Valves

You can't afford to experiment with systems of electrical control of water-level (pumps) in your standpipes, tanks, reservoirs. The failure of a "system" may mean heavy loss in water, revenue, troubles, complaints, etc. Select the *best you can* possibly afford, after thoro investigation—remembering always that the valves shown here have been proven efficient for this work by years of real service.

These valves will "cut in" or "cut out" one or more driven pumps. Actuated by the fall or rise of water level in standpipes, tanks or reservoirs. Control pumps automatically, from distant points if desired. By maintaining a constant water level, they stop water waste due to overflow, and also all unnecessary pumping. For high or low pressure. Air and water cushioned. No floats or fixtures. No water hammer or shock. No metal to metal seats. Solenoid furnished for alternating or direct current. Especially adapted for railroads, water works and industrial plants.

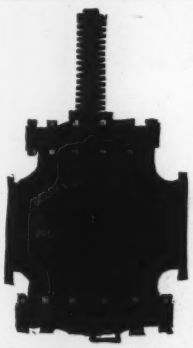
"No Floats or Fixtures" "No Water Hammer or Shock"



Sizes to 30 in.

Will Also Operate Warning Bells and Signal Lights

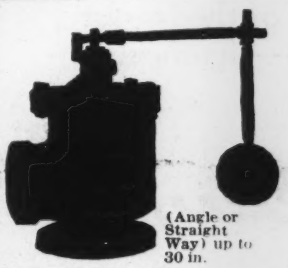
"Hosts of References"—Every Valve with an Absolute Guarantee



Golden-Anderson Patent
Automatic Cushioned Water-Regulating Valves

1. Maintain an absolutely constant reduced water pressure regardless of pressure fluctuations on the initial side.
2. Perfectly cushioned both in opening and closing. No metal-to-metal seating. No sticking or chattering.
3. Absolutely self-contained. No auxiliary valve or by-pass is necessary.
4. Once adjusted, no further attention is required.
5. Sizes to 30 inches.

Golden-Anderson Pat.
Automatic Float Valves



(Angle or Straight Way) up to 30 in.

1. Accurately control the water in open tanks, hot wells, reservoirs, etc., between two fixed limits.
2. Cushioned by both water and air. No metal to metal seating, pounding, sticking or chattering.

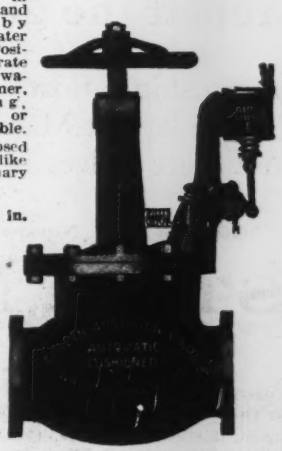
Can be regulated to operate quickly or slowly on High or Low pressures. Float swivels to any angle desired.

Construction. Heavy Iron Body, Bronze mounted. Virtually indestructible, due to service.

GOLDEN-ANDERSON
Patent Automatic Cushioned Electric Water Service Valves

1. Give instant control of the water distribution from the pumping plant in case of fire or other emergency.
2. Can be opened or closed by electricity by closing a small switch for a few seconds only. Thus no current is wasted.
3. Can be provided with either d. c. or a. c. solenoid as circuits require.
4. Cushioned in opening and closing by both water and air. Positively operate without water hammer, surging, sticking or other trouble.
5. Can be closed by hand like any ordinary valve.

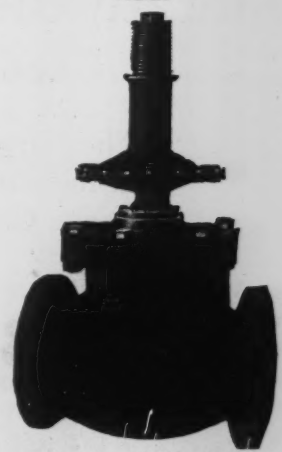
Sizes to 30 in.



GOLDEN-ANDERSON
Cushioned Water Relief Valves

Automatically Relieve Excess Pressure—

Prevent Stress, Strain and Bursting Mains

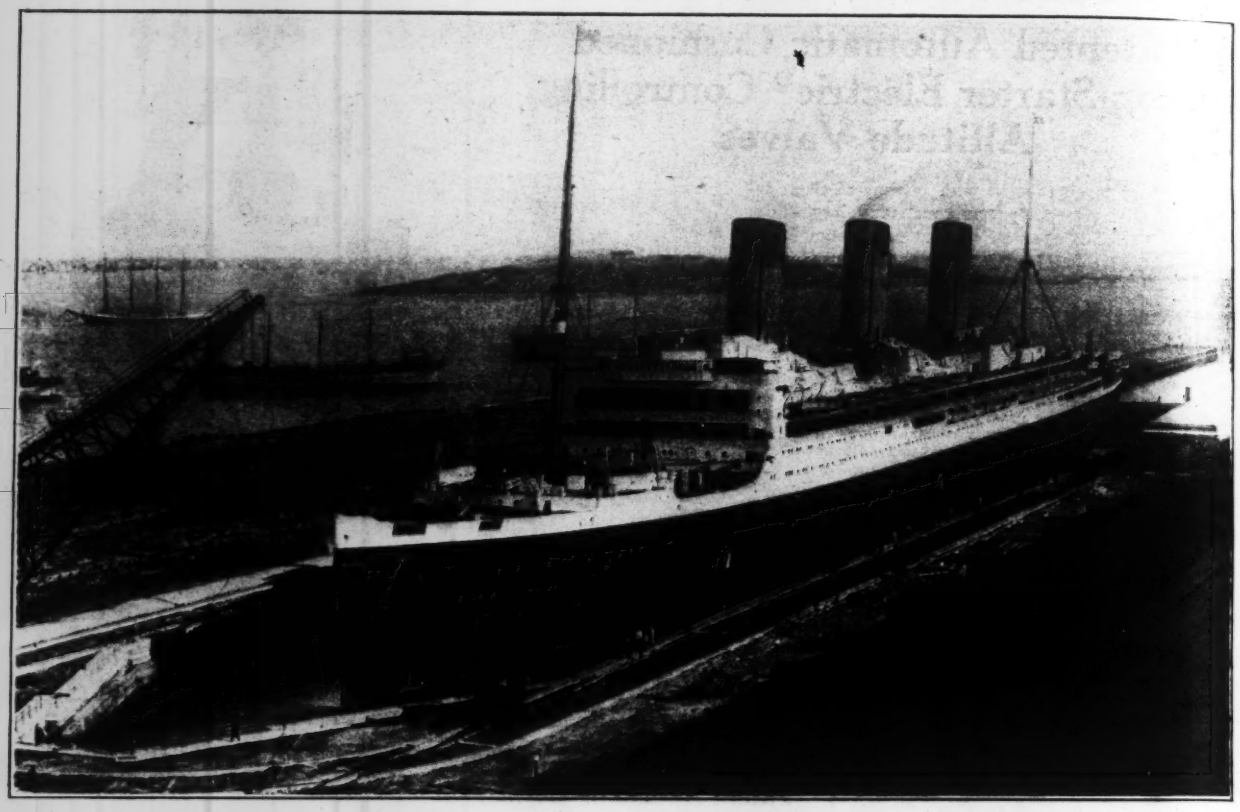


Angle and Globe Patterns
Sizes 3 in. to 30 in.

Golden-Anderson Valve Specialty Co., 1202 Fulton Bldg., Pittsburgh, Pa.

COFFIN VALVE COMPANY

Makers of the Largest Sluice and Gate Valves in America



Coffin Valves
Operate the great South Boston Drydock
Used to repair the giant "Majestic"

The largest Steamship afloat—the largest Drydock in the country—the largest Manufacturers of the largest Sluice Gates and Gate Valves in America—significant!

Check Valves
Flap Valves
Foot Valves
Sewer Gates

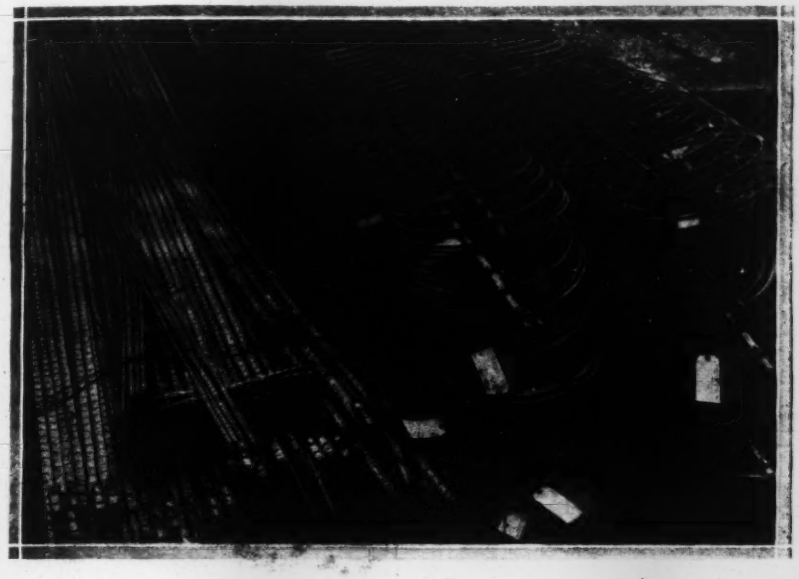
Office and Works, Neponset, Suburb of

BOSTON, MASS.

Sluice Gates
Gate Valves
Butterfly Valves
Fire Hydrants

REPRESENTATIVES:

New York City: C. W. Bergen & Co., 50 Church St.
Philadelphia, Pa.: DeHuff & Hopkins, Morris Building
Cleveland, Ohio: Tomlinson Steam Specialty Co., 1597 St. Clair Ave.
San Francisco, Cal.: Theo. F. Dredge, Monadnock Building
Chicago, Ill.: Whitney & Ford, 4325 Cottage Grove Ave.
Toronto, Ont.: The Arthur S. Leitch Co., Ltd., 1001 Kent Building



Spirals and Bars
For Immediate Shipment

BESIDES furnishing bars and accessories for concrete reinforcing, we make column spirals of any size and specification and deliver the material at your job just when you specify—all cut, bent, bundled and tagged ready to be set in the forms. This includes column ties, bar spacers, stirrups, chairs, etc.

You will find it pays to get our lump sum or pound price estimate. Send in your engineers' or architects' plans and let us prove it.

Write for Ryerson Journal and Stock List, containing complete information on reinforcing materials and other steel products, such as structurals, bars, plates, sheets, tubes, rivets, bolts, etc.

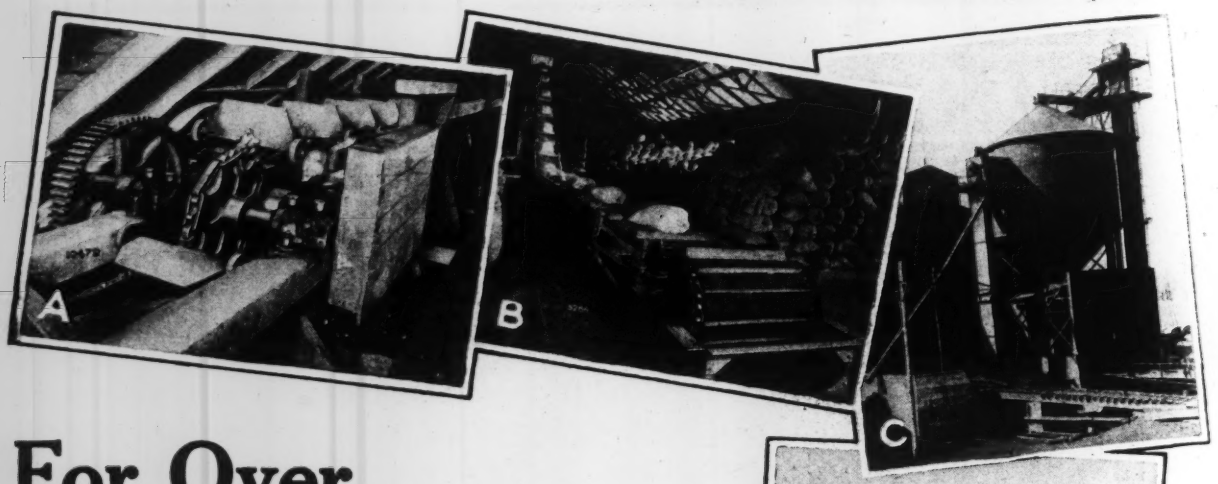
ESTABLISHED 1842 INCORPORATED 1900

JOSEPH T. RYERSON & SON

CHICAGO · ST. LOUIS · DETROIT · BUFFALO · NEW YORK

BRANCH OFFICES: DENVER · HOUSTON · JERSEY CITY · MILWAUKEE · MINNEAPOLIS · NEWARK · SAN FRANCISCO · TULSA

RYERSON STEEL-SERVICE



For Over Forty Years

Jeffrey Engineers have cooperated with the men responsible for results in the Engineering and Contracting fields, Industrial and Power Plants, Public Works, etc.

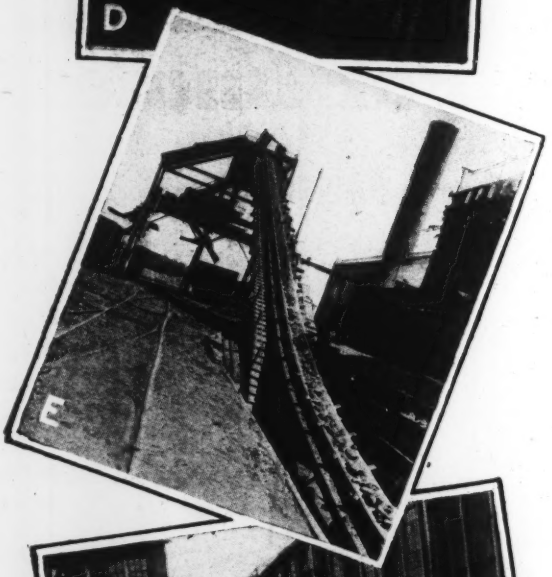
This has been productive of successful equipments, which have been a deciding factor in producing greatest production at lowest cost.

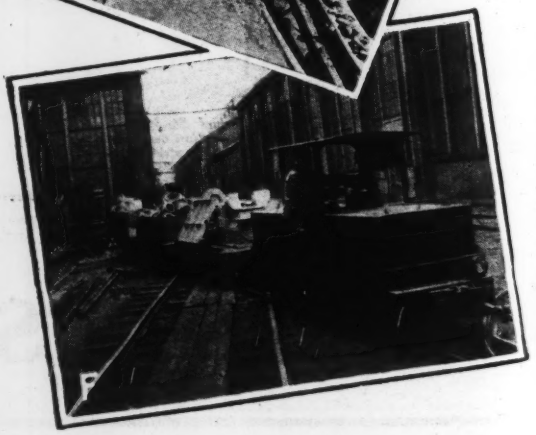
To meet the imperative demands of industry today will mean in many plants, new methods, faster and more dependable material handling equipments. Jeffrey experts are ready to help you select the right equipment to meet the emergency.

Jeffrey Standard Material Handling Machinery Equipments include:

Elevators; Chains for all Elevating Conveying and Power Transmission purposes; Conveyors of various types; Coal and Ashes Handling Machinery; Skip Hoists; Portable Bucket Loaders and Belt Conveyors; Industrial and Mine Haulage Locomotives; Coal Mining and Tipple Machinery, etc.

Ask for latest Catalogs.





The Jeffrey Manufacturing Company
923-99 North Fourth Street, Columbus, Ohio

JEFFREY
MATERIAL HANDLING MACHINERY

Oxwelding a 9-inch crank shaft broken in three places

An Ounce of Cure Cheats the Scrap Heap

What Oxweld has done for others—Oxweld can do for you.

An illustrated book "Oxweld Can Do It" tells what oxwelding is doing—write for it

It would have cost a lot of money, to say nothing of lost weeks, to replace this badly cracked nine inch crank shaft.

The oxwelder's torch put it back to work — as good as new — in a few days and at a trifling cost.

That is the every-day story of oxwelding—saving time and money wherever machines of metal are subject to wear and tear.

And in production, too, the oxwelding and cutting blowpipes are turning out stronger, neater products—quicker and at a great saving.

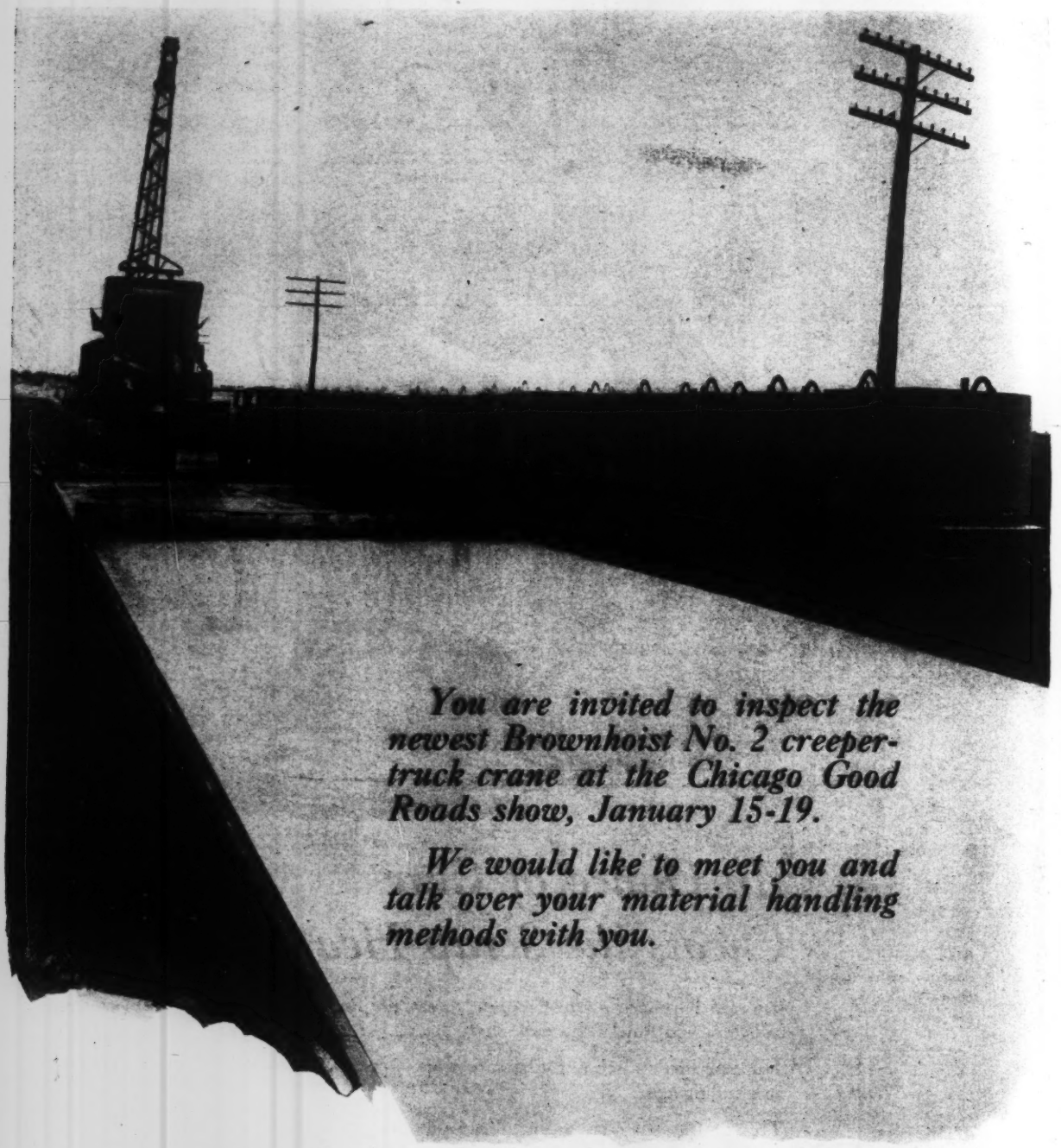
In more than fifty cities are stationed Oxweld Service Engineers—why not ask to have one of these experts demonstrate how oxwelding and cutting may be used in *your* plant to *your* profit. There is no charge for such service.

OXWELD ACETYLENE COMPANY · *Newark, N. J.* · *Chicago* · *San Francisco*

Sales Representatives in the Principal Cities of the World

WORLD'S LARGEST MAKER OF EQUIPMENT FOR OXWELDING AND CUTTING METALS

1315-22



You are invited to inspect the newest Brownhoist No. 2 creeper-truck crane at the Chicago Good Roads show, January 15-19.

We would like to meet you and talk over your material handling methods with you.

The Brown Hoisting Machinery Co., *Cleveland, O.*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans

Products: Locomotive Cranes, Buckets, Belt and Chain Conveyors, Contractor's Bunkers, Etc.

BROWNHOIST

MATERIAL HANDLING MACHINERY

POSITIONS WANTED

CALIFORNIA construction companies, office man, twenty-six and single, available March 1; nine years' experience on marine, business and industrial projects in Eastern states and tropics. PW-434, Eng. News-Record, 10th Ave. at 36th St., New York City.

ENGINEER as executive, practical inventive, on derricks, cranes or steel construction requiring development, desires position with progressive concern. Open about January, 1923. PW-373, Eng. News-Record, 10th Ave. at 36th St., New York City.

EXPERIENCED and skillful operator on locomotive crane, clam-shell or drag-line. Available immediately for long job. Age 34, married. PW-388, Eng. News-Record, Rialto Bldg., San Francisco, Calif.

HYDRAULIC engineer, at present responsible charge design and construction, hydro-electric and waterworks projects, thirteen years in charge projects of magnitude. Member Am. Soc. C. E., graduate C. E., age forty, desires change. PW-420, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

MAN having 18 years' experience on waterworks, heavy rock excavation, hydro-electric and transmission lines construction as general foreman and superintendent. A-1 mechanic on pumps, meters, motors and steam. Would like to connect with municipal plant. PW-356, Eng. News-Record, 10th Ave. at 36th St., New York City.

MUNICIPAL engineer and waterworks superintendent desires employment in a city of 25,000 or over; salary $5,000. PW-236, Eng. News-Record, Real Estate Trust Bldg., Philadelphia, Pa.

SALES manager, broad technical education, extensive experience, design, construction and production. Now employed as sales manager. Available Jan. 1st for bigger opportunity. PW-381, Eng. News-Record, 10th Ave. at 36th St., New York City.

YOUNG man, age 27, desires position as general foreman on concrete and brick work. Have technical education and can handle men. PW-423, Eng. News-Record, 10th Ave. at 36th St., New York City.

TRAINED executive, now employed, seeks position of greater responsibility and of harder work. Foreign service acceptable. Spanish speaking country preferred. Experience: Graduate civil engineer, seven years pioneer engineering in tropics, six years contractor's superintendent of construction on public improvements. Qualifications: Skilled in all clerical and manual labor of contracting and engineering; especially recommended for attention to details and skilful organization. PW-424, Eng. News-Record, Leader-News Bldg., Cleveland, Ohio.

POSITIONS WANTED

REPRESENTATION WANTED

Representatives Wanted

We want live representatives in all large cities for the sale of steel reinforcement and accessories for reinforced concrete, etc. We are an old established concern. Liberal commissions paid to live sales engineers who are willing to enter into yearly contracts. Sales engineers with established business preferred. RW-431, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

REPRESENTATIVES AVAILABLE

Sales Representative

Civil and architectural engineer, with office at 219 North American Building, Philadelphia, wants to represent the product or products in this vicinity of some established manufacturer. D. C. Finston.

AGENCIES AVAILABLE

Manufacturer's Agent

Iron, steel and contractor's equipment; established offices in Philadelphia; would like to take on additional line to follow up inquiries or leads and do some missionary work. A-436, Eng. News-Record, Real Estate Trust Bldg., Philadelphia, Pa.

WANTED

Conveyor

About five hundred feet of used gravity conveyor wanted. What have you to offer? Philadelphia Storage Battery Co., Ontario & C Streets, Philadelphia, Pa.

Wanted to Buy

A 2½ yard or 3 yard Hayward type Orange Peel Bucket. Must be in first-class working order. McWilliams Dredging Company, 1537 McCormick Building, Chicago, Illinois.

BOOKS AND PERIODICALS

Complete Set For Sale

Of U. S. Geological Survey Water Supply publications of nearly 500 copies, to highest bidder for next thirty days, perfect condition. Gurley Light Mountain transit with straight standards, reversion level, with complete Burt Solar equipment; mountain tripod. Excellent condition, $285.00. BP-413, Eng. News-Record, 10th Ave. at 36th St., N. Y. C.

PATENT ATTORNEYS

PATENTS — Send for form "Evidence of Conception" to be signed and witnessed. Form fee schedule, information, free. Lancaster and Allwine, 262 Ouray Bldg., Washington, D. C.

Notice to Advertisers!

Owing to the holiday — New Years — the *"Searchlight" pages* of the January 4th issue of *Engineering News - Record* will close for press earlier than usual. Copy should reach us for

Display and Want Ads
by 10 A.M., Saturday, December 30th.

Proposal Ads
Copy received as usual up to 11 A.M., Tuesday, Jan. 2nd.

WANTED

A POWER SHOVEL SALES ENGINEER

to sell the products of a Company well known throughout the country for over thirty years

To qualify, the candidate selected must be entirely familiar with the application of power shovels, dragline and trench excavators.

He must have a knowledge of gasoline engines and vision to see the tremendous possibilities when used on dirt moving machinery.

A wide acquaintance among contractors in New York City and State is essential as immediate results will be expected.

A two-fisted, hard hitting, business producing salesman, fully conversant with modern sales methods, is the man we want.

Headquarters: New York City

Address AS-422, Engineering News-Record
10th Ave. at 36th St., New York City.

ADVANCE AGENT WANTED

A well established contern of engineers and builders, who have developed a type of fireproof construction specially adaptable to industrial buildings, are seeking representatives to forward information as to industrial buildings under contemplation in their section of the country. Manufacturer's Agents already engaged in a well founded business along industrial lines can have a profitable side line by representing us.

AS-421, Engineering News-Record
Old Colony Bldg., Chicago, Ill.

WANTED

CEMENT GUN OUTFIT

for re-finishing concrete building. State price and capacity. With or without compressor.

W-332, Engineering News-Record
10th Ave. at 36th St., New York City.

EXCAVATION

Steam Shovels for rent with crews or work taken by contract.

Dinkeys and cars or teams furnished.

H. C. AMBLER
3717 Old York Road, Philadelphia, Pa.

Second-Hand Transits and Levels

Guaranteed in Good Order and Adjustment.
Write for New Bargain List
WILLIAMS, BROWN & EARLE, INC.
918 Chestnut St., Philadelphia, Pa.
Department D

NEW AND USED SURVEYING INSTRUMENTS AT FACTORY PRICES

Satisfaction guaranteed or money refunded. Write for complete list and catalogue of our high grade instruments and supplies for civil engineers, surveyors, mining, builders, contractors, etc.; 40 years' experience in repairing instruments of all makes at reasonable prices. Prompt service.

WISSLER INSTRUMENT CO.
607 N. Broadway, St. Louis, Mo.

LOCOMOTIVE CRANE

Industrial 10-ton, 8-wheel Steam Crane, 48-ft. boom, bucket handling drums, standard gauge, good condition. Immediate shipment. F.O.B. Milwaukee, $3800 cash.

H. Y. SMITH COMPANY, Milwaukee, Wis.

LAND FILLING
CLEAN STEAM

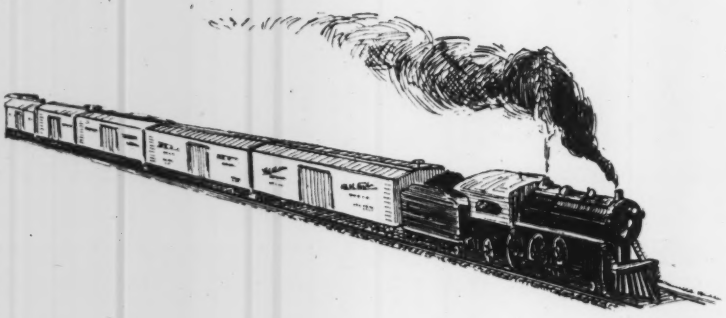
CINDERS

ROAD BUILDING
SCOW LOAD QUANTITIES

500 to 2000 cu. yds. daily output

Phone: Mulberry 2670 HENRY B. COOKE CO., Inc. 810 Broad St., Newark, N. J.

Railway Equipment



Contractors enter your bids before January 16th

Industrial and Standard Gauge Rolling Stock

Push Cars
Motor Cars
Locomotives
Box Cars
Flat Cars
Dump Cars
Powder Cars
Passenger Cars
Tank Cars

SEALED bids for any or all of the equipment listed below will be received in the Office, Chief of Engineers, Room 2830 Munitions Bldg., Washington, D. C., before 3 p.m., Jan. 16. This equipment is in general good condition and may be inspected upon application to the commanding officer, point of storage. Send for proposal of sale which gives all information concerning equipment and terms of sale. Address, as above.

Ordnance Reserve Depot, Tullytown, Pa.—1 gasoline motor car, stand. gauge; 4 push cars, stand. gauge; 5 push cars, 36-in. gauge; 15 flat cars, 36-in. gauge; 25 box cars, 36-in. gauge; 15 black powder cars, 36-in. gauge; 1 tank car, 36-in. gauge; 1 dump car, stand. gauge.

Watertown Arsenal, Watertown, Mass.—4 dump cars, stand. gauge; 11 flat cars, stand. gauge; 7 standard car wheels.

Morgan Gen. Ordnance Depot, South Amboy, N. J.—1 box car, stand. gauge; 1 saddle tank locomotive, American, stand. gauge; 12 dump cars, stand. gauge.

Ordnance Reserve Depot, Toledo, Ohio—2 box cars, stand. gauge.

Camp Dix, N. J.—1 tank car, 36-in. gauge; 4 flat cars, 36-in. gauge; 18 box cars, 36-in. gauge; 17 electric motor cars, 36-in. gauge.

Curtis Bay, Md.—4 passenger cars, stand. gauge, vestibule platforms. No seats in cars.

The Government reserves the right to reject any or all bids

WAR DEPARTMENT

SEARCHLIGHT SECTION

USED EQUIPMENT AND NEW

Offered for Re-sale

Space for these advertisements is sold by the advertising inch—30 inches to a page. The price per inch is based on total space used—multiply ad space by number of insertions.

RATE PER INCH:
1 to 3 inches.....$5.00 an inch
4 to 7 inches..... 4.80 an inch
8 to 14 inches..... 4.70 an inch

An inch is measured vertically on one column—three columns to a page. Any space may be used measured by the even inch in height by 1, 2, or 3 columns in width.

RATES FOR LARGER SPACES, OR SPACE ON A YEARLY BASIS, FURNISHED ON REQUEST.

E. N. R.

LET GEORGE DO IT! **FOR SALE OR RENT** LET GEORGE DO IT!

PUMPS
3-in. Diaphragm, gas and electric.
3- to 8-in. Centrifugals.
6-in. Centrifugal, dir. conn. to gasoline engine.

MIXERS
1—¾-yd. Ransome, electric.
2—½-yd. Ransome, electric.
1—13-ft. Lansing, gasoline.
2—10-ft. Eureka Power Loaders, gaso. & elec.
2—10-ft. Ideal, gasoline and electric.

SAW TABLES
2—No. 7 Knickerbockers, gas or electric.

TRACK TOOLS
1—Electric Track Drill and Tools.

COMPRESSORS
1—7 x 10 Chicago Pneumatic, gasoline, portable.
1—8 x 8 Clayton, belt driven.
1—No. 3 Schramm, gasoline, portable.

TOWERS
500 ft. Standard Size Wood Tower.

All equipment may be inspected at Brooklyn Yard.

Write for George's Red Book.

E. GEORGE & CO., 407-409 Broadway, New York City
Established 1873

FOR SALE OR RENT
Rebuilt Mixers and Hoists
From our New York Warehouse

5—7-S Knickerbocker Mixers, gasoline driven.
3—4-S Standard Mixers, low charging. Novo engines.
4—Mortar Mixers, continuous type, gasoline driven.
1—14-S Ransome Mixer, batch hopper, elec. drive.
1—14-S Smith Mixer, tilting drum, steam driven.
1—28-S Ransome, batch hopper, steam engine.
1—7-in. x 10-in. Lidgerwood D.D., D.C. hoist with boiler and swinger.
1—8¾-in. x 8-in. Lidgerwood D.D.,D.C. hoist with boiler.
1—9-in. x 12-in. National Three-Drum Hoist with boiler and swinger.
Gasoline Hoists, 6 to 10 hp., single or double drum.

THE HUBBARD-FLOYD CO., INC.
MAIN OFFICE: Grand Central Palace, New York, N. Y., Vanderbilt 1465
BOSTON OFFICE: Old South Building, Main 4233.

CRANES
1—O. & S. 15-ton, 8-wheel Crane, full M. C. B.
1—20-ton McMyler, 8-wheel Crane, full M. C. B.
1—Little Giant Traction Crane.
1—Brand new gasoline, on caterpillar.
1—Model 3 Keystone with skimmer scoop.

SHOVELS
1—21 Marion Caterpillar with shovel and Crane booms.
1—36 Marion Traction, 1½-yd. Dipper.
1—No. 0 Thew with clam shell attachment.

CRUSHERS
1—No. 10 McCully, manganese fitted.
1—No. 9 Gates, Style K almost new.
1—No. 8 Austin, chilled iron fitted.
1—No. 6 McCully, manganese fitted.
1—No. 5 McCully, chilled iron fitted.
1—No. 3 Gates, manganese fitted.
1—28 x 36 Traylor Jaw Crusher.

CARS
30—100,000 capacity, std. gauge, all steel, double hopper gondola cars.

MIDWESTERN CO.
140 South Dearborn Street, Chicago
Telephone State 8356

DERRICK BOAT FOR SALE

Two hulls 90 ft. x 16 ft. each, clearance over all 35 ft., fully equipped locomotive type return tube boiler, triple drum 9 x 12 National hoist, swing engine, necessary spud hoists and spuds, etc., boom 55 ft. long.....$7500
1—10 x 16 Vulcan Locomotive, 36 in. gauge..... 1200
7—12-yd. Oliver Dump Cars (entirely rebuilt and not since used), each.. 1000
1—65-ton Bucyrus Shovel..... 7500
1—70-ton Bucyrus Shovel..... 5000
1—1-yd. Hayward Orange Peel Bucket..... 550
1—3-yd. Hayward Orange Peel Bucket..... 1500

Also other construction equipment at low prices.

James H. Dawes, General Contractor, Tonawanda, N. Y.

NEW TRACTION CRANES
Full Revolving Road Cranes; 7-ton capacity, with ¾-yd. bucket.

ASPHALT PLANT
1—Iroquois 1250-yd., 3 unit Road Asphalt plant; complete.

PAVER
1—Austin Semi Caterpillar, 21-E Paving Mixer 5 Bag Machine, with boom and bucket; fine condition; low price.

ROAD ROLLER
1—Kelly-Springfield, 10-ton, 3-wheel, double cylinder, steam road roller.

STEAM SHOVELS
1—Marion, Model 28; ¾-yd. dipper; on traction wheels; first class condition.
1—Marion, Model 31, on caterpillars, 1-yd. dipper.

LOCOMOTIVES
American 6-wheel Switcher. Cylinders 18 x 24-in., drivers 44 in., wheel base 11 ft. 6 in., weight 60 tons.

LOCOMOTIVE CRANE
1—20-ton McMyler 8-wheel M.C.B. bucket drums, 40-ft. boom.

We carry in stock concrete mixers, air compressors, hoisting engines, boilers, buckets, pipes, cars and other equipment.

F. MAYER
737 Monadnock Bldg., Chicago, Ill.

New Structural Steel

200 tons (4700 pieces) 5 in. 9¾ lb. I Beams 9 ft. 0 in. To complete shipments from this point $22. net ton, f.o.b. New Cumberland, Pa.

Henry A. Hitner's Sons Co.
4501 Richmond St., Philadelphia, Pa.

FOR RENT AND SALE
14—4-yd., 36-in. gauge, heavy duty Western dump cars.
20—12-yd. Western air dump cars, std. gauge.
50—60,000-lb. capacity flat and box cars.
1—Western std. gauge spreader, used sixty days.
1—Osgood 18 revolving shovel, traction wheels, No. 794, ¾-yd. bucket, built 1920.
1—Marion 76 steam shovel, No. 3503, std. gauge, weight 110 tons, used 10 months.
1—Class 14 Bucyrus dragline on caterpillars, 70-ft. boom, 2-yd. bucket, built in 1921.
2—Foote 40-S 1-yd. side discharge concrete mixers, with steam engine and boiler.
32—NEW 20-in. I-beams, 80 lb. per ft., 40 ft. long, not drilled.
1—NEW Lakewood concrete chuting system.

LOCOMOTIVES
1—50-ton, 18 x 24-in., 6-wheel switcher.
1—40-ton, 17 x 24-in., 4-wheel switcher.
2—NEW 24-ton, 6-wheel Porters, separate tender, 36-in. gauge.
2—18, 14 and 10-ton Vuleans, 36-in. gauge.

INDUSTRIAL EQUIPMENT CO.
McCormick Building, Chicago, Ill.

FOR SALE OR RENT

STEAM SHOVELS

1—Type B Erie, full revolving trac. shovel, Shop No. 618, special high lift boom, long dipper and boom hoist, ⅜-yd. dipper.
1—Model 28 Marion, full revolving traction shovel, Shop No. 3374; ⅝-yd. dipper.
1—Osgood 18, caterpillar traction, ¾-yd. dipper steam shovel, Shop No. 875, new in 1920. Also includes 30-ft. crane or dragline boom, with ¾-yd. Page dragline bucket.
1—18B Bucyrus, full revolving, traction wheels, Shop No. 1870, ⅞-yd. dipper.
1—Model 36 Marion, full revolving traction shovel, Shop No. 3304, new 1½-yd. dipper. Delivery Jan. 15th.
2—70-c Bucyrus, Shop No. 1536, 1287; 2½-yd. dippers.
1—70-ton Bucyrus, Shop No. 939; standard 70-C boom, 2½-yd. dipper.
1—65-ton Bucyrus, Shop No. 394; 2½-yd. dipper.
1—Model 60 Marion, Shop No. 1301, 2½-yd. dipper.

SPREADER CARS

1—Std. Gauge, all steel Jordan Air Spreader; 100,000-lb. capacity.
1—Std. Gauge Western hand spreader car.

DRAGLINE EXCAVATORS

1—Class 7 Bucyrus steam-operated Dragline, Shop No. 798, mounted on skids and rollers with floats, 42-ft. boom, 1-yd. bucket.
1—Class 14 Bucyrus Dragline; 60-ft. boom, 2 yd. Page Bucket, skids and rollers.
2—Class 24 Bucyrus Dragline, Shop Nos. 3445 and 3500, built 1920; 100-ft. booms, 3½ yd. Page buckets, steam-operated.
1—Model 220 Marion, Shop No. 2840; 71-ft. boom with 20-ft. extension; 2-yd. Page bucket; skid and roller, also 4—4-wheeled truck mounting.

LOCOMOTIVES

1—17 x 24 Davenport, 6-wheeled switches with tender; 47 tons n drivers, 180 lb. steam pressure, 10-ft. 6-in. wheelbase, 42-in. wheel centers. Shop N. 1268. New in 1912.
1—16 x 24 Vulcan, 4-wheeled switcher with tender; 39 tons on drivers, 180-lb. steam pressure. Shop No. 1764. New in 1911.
1—16 x 24 Baldwin, 4-wheeled switcher with tender; 39 tons on drivers, 180-lb. steam pressure. Shop No. 34631. New in 1910.
1—15 x 20 Davenport, 4-wheeled switcher with tender; 30 tons on drivers, 160-lb. steam pressure. Shop No. 770. New in 1908.
3—16 x 24 Davenport, 4-wheeled switchers with tenders; 36 tons on drivers, 170-lb. steam pressure. Shop Nos. 858, 860 and 861. New in 1909.
1—36-in. Gauge, 10 x 16 cyl., Vulcan, 4-wheel saddle tank locomotives. Shop Nos. 1226, weight 18 tons.
1—36-in. Gauge, 10 x 16 cyl., American 4-wheeled Saddle Tank Locomotive. Shop No. 12507, weight 16 tons.

LOCOMOTIVE CRANES

1—15-ton McMyler-Interstate Crane (Shop No. 6761, full M.C.B., 8-wheeled, with 50-ft. boom and bucket-handling drums.
1—Pintle Type Crane, built by Variety Iron & Steel Works. New in 1919; 48-ft. boom, 15-ton cap. at 18-ft. radius; 7-ft. 10½-in. gauge, 12-ft. wheelbase, self-propelling. Base of boom 17 ft. above track. Bucket-operating drums. Wt. 50 tons. Price, 25% of new.

R. R. PILE DRIVER

1—Track Pile Driver, Industrial Type No. 2, mounted on all steel M.C.B. car body. All steel leaders, 40 ft. high. Drop hammer and double-acting steam hammer. Shipping wt. 140,000 lb.

DUMP CARS

24—16-yd. Western air dump cars.
30—12-yd. Western Std. Gauge Dump Cars; brakes and air dump, full M.C.B., 19-ft. beds, steel underframes, box girder doors.
90—12-yd. Western Std. Gauge Dump Cars, air brakes and hand dump, full M.C.B., steel underframes, 19-ft. beds, box girder doors, 60,000-lb. capacity trucks.
8—12-yd. Western hand-dump cars, 19-ft. bed, steel underframes, truss rod doors.
5—12-yd. Oliver dump cars, hand dump, steel underframes; full M.C.B.
2—4-yd. K. & J. 36-in. gauge side dump cars.
30—1½-yd., 24-in. gauge Western dump cars.

HOISTING ENGINES

3—7 x 10, D.C., D.D. American Hoising Engine, complete with boiler and swinging attachment.
1—7 x 10, D.C., D.D. Lambert Hoisting Engine, without boiler.
1—7 x 10, D.C., 3-Drum Lambert Hoisting Engine, complete with boiler.
1—7 x 10, D.C., D.D., Clyde Hoist with A.S.M.E. boiler.
1—7 x 10, D.C., D.D. Lidgerwood Hoisting Engine without boiler.

MISCELLANEOUS

1—Williams 1½-yd. heavy digging clam shell bucket, brand new.
20—Sets Standard Chain Tug Harness, with collars, brand new.
1—Stiff-leg Derrick, wood, 55-ft. boom, 39-ft. mast, bucket handling shieves.
1—No. 2 Vulcan Steam Hammer.
1—Industrial Steam Pile Driver Hammer, Serial No. 324.
1—Pair steel Pile Driver Guides for derrick, 42 ft. long.
1—60-hp. Boiler, Locomotive type, 125 lb., pressure, lap joint, complete with fittings.
2—Stable tents, 30 ft. x 50 ft.

CLAPP, RILEY & HALL EQUIPMENT CO., 14 So. Canal St., Chicago

(Successors to Clapp, Norstrom & Riley Equipment Co.)

TRANSMISSION

New and Used Dodge Equipment for Immediate Delivery

Shafting—Cold rolled steel—All sizes and lengths.
Shaft Hangers—All types and sizes.
Bearings—Capillary, Ring and Standard Oiling.
Pillow Blocks
Friction Clutches—Dodge Split, Solid and Jaw.
Collars—Solid, Split and Thrust
Pulleys—Split and Solid—Cast Iron, Steel and Wood.
Bushings
Grease Cups

Our Bulletin No. 15 will give you complete information

Nashville Industrial Corporation
Jacksonville, Tennessee.

FOR SALE

3—6-ton Whitcomb Locomotives.
1—6-ton Plymouth Locomotive.
2 Miles 20-lb., 24-gauge Portable Track.
1 Mile 25-lb., 24-gauge Portable Track.
Switches and turnouts for the above
20—Lakewood Roller Bearing Batch Box Cars.
15—Atlas Roller Bearing Batch Box Cars.
70—Western Wooden Dump Bottom Batch Boxes.
With seperate compartments for sand, gravel and cement.
1—Holt, 10-ton Caterpillar Tractor.

The above equipment has been used to build approximately five miles of Federal Aid Road and can be purchased very cheap

SHEA & COMPANY
Hammond, Indiana.

IMMEDIATE DELIVERY

Send Us Your Steam Shovel Inquiries

66 x 86-in. TRAYLOR JAW CRUSHER.
No. 18K GATES CRUSHER.
25-50-80-110-hp. Electric hoists.
Nos. 4, 5, 6, 7½, 9 and 10 CRUSHERS.
6- and 12-ton Gasoline Locomotives.
NEW 1468-ft. SULLIVAN COMP., 2-stage type, WN4, ½ coupling, $1900.
2—DISC CRUSHERS, 36- and 24-in. SYMONS.
100-ton, 2½-yd. ELECTRIC SHOVEL.
Columbus Portable Conveyor, 25-ft. Eng. drive.
50-500-ft. steam, belt and electric drive comp.
JAW AND ROLL CRUSHERS.
10-15- and 20-ton Locomotive Cranes.
13 x 30-in., 10 x 18-in., 9 x 14-in. JAW CRUSHERS.
1000 g.p.m. UNDERWRITERS' STEAM PUMP, practically new.
24 x 54 McLANAHAN ROLL CRUSHER.
Send us your inquiries for Steam Engines, Cent. Pumps, Quarry and Contrs. Equip., etc.

ROSS POWER EQUIPMENT COMPANY
Indianapolis, Ind.

PAVERS—ROLLERS

1—10-E Smith Steam Paving Mixer, Wheel traction, boom and bucket, 2-bag. Size, 192. Model, like new, $1800.
1—Foote 13-E, Steam Wheel Paver, 2-bag size chute, Wisconsin, $950.
3—Austin Gasoline Rollers, 10-ton, 3-wheel, good condition, working every day, each $1100.

H. Y. SMITH CO., Milwaukee, Wis.

FOR SALE OR RENT

STEAM SHOVELS

1—14B Bucyrus revolving, new 1921; all steel caterpillar tread standard boom, ¾-yd. dipper.
1—18B Bucyrus revolving, new, late 1920, all-steel caterpillar tread power boom hoist, standard boom, ⅞ cu. yd. dipper.
1—18B Bucyrus revolving, traction wheels, standard boom, ⅞ cu. yd. dipper.
1—Model 18 Osgood; revolving traction wheels. Combination steam shovel, clamshell and dragline attachments; ¾-yd. dipper, 32 ft. Crane boom, ¾-yd. Page bucket.
1—70-ton Bucyrus, standard gage, R.R. type, 2½-yd. dipper.

LOCOMOTIVES

1—American Passenger; type 4-4-0; stand. gauge; 50-ton.
3—14 x 22, 40-ton American Saddle Tank standard gauge.
2—10 x 16, 18-ton Davenport, saddle tank, 36-in. gauge.

TRACTOR AND TRAILERS

1—120 hp. Holt Caterpillar Tractor, completely rebuilt at factory July, 1921.
3—5-ton Troy Trailers.
10—3-yd. Troy Trailers, bottom dump, reversible, steel wheels, 8-in. face.

DRAGLINES

1—Model 36 Marion, steam operated caterpillars, 50-ft. boom, 1½-yd. bucket.
1—Class 9½ Bucyrus, steam operated caterpillars, 45-ft. boom, 1½-yd. bucket.
1—Class 14 Bucyrus; skids and rollers; 60-ft. boom; 2-yd. bucket.
2—Class 14 Bucyrus, steam operated, shop Nos. 3691 and 3692, new July, 1922, skids and rollers, electric light plants, 60-ft. booms, 2-yd. Page buckets.
1—Class 14 Bucyrus truck mounting, 60-ft. boom, new 2-yd. bucket.
1—Class 20 Bucyrus, steam operated, skids and rollers, 75-ft. boom, 15-ft. extension, 3-yd. bucket.
2—Class 24 Bucyrus Steam operated, shop Nos. 3445 and 3500, New 1920; 100-ft. booms, 3½-yd. Page buckets.
1—Class 24 Bucyrus Electric skids and rollers, 100-ft. boom, 3½-yd. bucket.
1—Monighan, A-1, steam; traction wheels; 40-ft. boom; 1 yd. bucket.
1—No. 2 Monighan Steam skids and rollers, 60-ft. boom, 2-yd. bucket.

The above list is constantly changing. No matter what your machinery requirements are, write us—we may have it.

BECK & BABB, 29 La Salle Street, CHICAGO, ILL.

Increase In Price—After Jan. 1st, 1923, $1,800

(On account of expense in the removal of remaining equipment from Hog Island to Primos, Pa.)

Primos, Pa. is 8 miles west of Philadelphia on the P. B. & W. R.R.

HOISTS DERRICKS

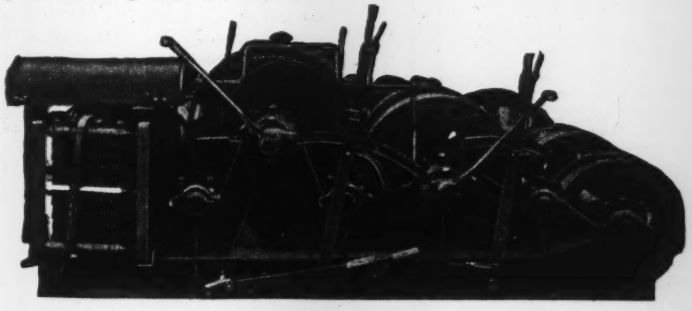
Where else can you save at least $2,000 on an Electric Hoist and Derrick?

We defy you to duplicate this SAVING!

THINK of it! Hoists and Derricks that are *standard late models*, made by the American Hoist & Derrick Co., St. Paul, Minn. Not old, used-up equipment. No sir! Almost NEW—every one GUARANTEED to be in A-No. 1 running order.

The Hoists have two drums and swingers, and are complete with Starting and Control Equipment. Either side or bank control, and rated 6000 pounds, single line on each hoisting drum. Slewing rope 36 ft. per minute, and hoisting rope speed 160 ft. per minute. The MOTORS are Otis 37 H.P. A.C., 60 cycle, 3 phase, 440 volt, intermittent duty slip-ring induction type and, if desired, may be changed to suit the individual current requirements of purchasers at cost.

You can see these hoists and Derricks easily—**at any time.** We sell as a set—or in Units of a Hoist or a Derrick. We can make quick shipment anywhere—but it is **up to you** to take QUICK ACTION to get yours. These tremendous bargains are selling fast—so get in touch with us at once if you want to save.



DIMENSIONS OF DERRICKS

Mast.....16 in. square, 40 ft. high.

Boom.....Made of (2) 14 in. sq. timber 48 ft. long spliced to lengths of 80 ft. with (2) ⅞ in. and (2) 1⅛ in. truss rods.

Stiff Legs..14 in. sq., 60 ft. long or 16 in. sq., 50 ft. long, will furnish either length desired, capacity 5 to 12 tons. Bull wheel 16 ft. dia. Principal sheaves 16 in. dia. and 14 in. single blocks.

The Cable which was formerly used will be given with each purchase of a Hoist and Derrick.

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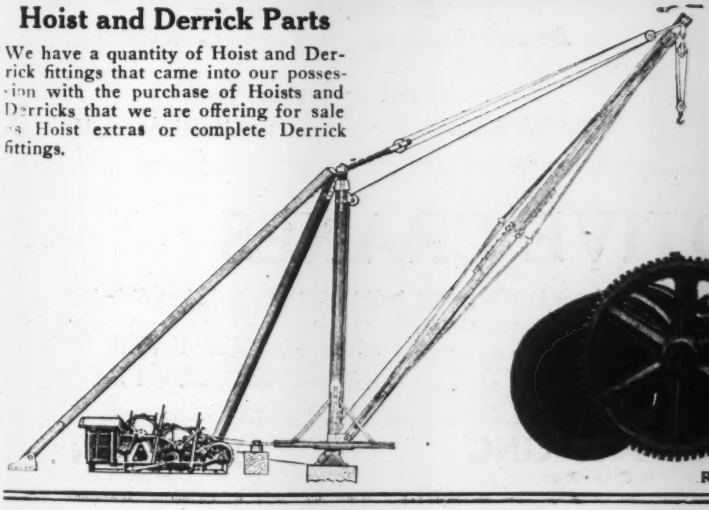
We have a quantity of Hoist and Derrick fittings that came into our possession with the purchase of Hoists and Derricks that we are offering for sale as Hoist extras or complete Derrick fittings.



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The Electric Hoist & Derrick Co.

Primos, Penna.

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GUARANTEED REBUILT EQUIPMENT

SELL OR RENT

OUR PRICES ARE RIGHT —TRY US

DERRICKS

3—All-steel Stiff-leg derricks, sectional booms 60 to 100 ft., 5 to 20-ton cap.
2—Wood stiff-leg derricks, bucket operating; also several derricks for two- and three-line work
1—Steel guy, 40-ton, 90-ft. mast.

HOISTS

5—Electric D.D., ranging from 55 to 100 hp.
6—Novo D.D., 12 hp., 2 cyl.
7—7 x 10, D. C., D.D. boilers, Mundy-Lambert, Lidgerwood and Meade-Morrison.
1—Lambert 8½ x 10, D.C., 3D skeleton.
1—Flory 8¼ x 10 D.C., 3 D., with Boiler.
1—Mundy 7¼ x 10 D.C., 3 D., with Boiler.

HAMMERS

1—No. 3 McKiernan-Terry.

LOCOMOTIVES, CARS AND TRACK

1—Std. Ga. Lima 10 x 16.
1—Std. Ga. Vulcan 21 ton.
3—Std. Ga. Americans, 50 to 60 ton.
1—Std. Ga. American, 20 ton.
1—Std. Ga. Whitcomb, 12 ton, gas.
1—36-in. Ga., 8-Ton Whitcomb Gas.
2—24-in. Ga. Plymouth & Whitcomb Gas.
3—36-in. Ga. Davenport, Porter & Vulcan.
30—36-in., 4-yd. Western Dump Cars.
15—24-in. Ga., 1½-yd. All-Steel Side Dump.
30—24-in. Ga. Western Flat Batch Box Cars.
6—Std. Ga. K. & J. 6-yd. Dump Cars.
20—Std. Ga., 12-yd. Western Dump Cars.
1½ miles, 24-in. Ga. Portable Track.

STEAM SHOVELS AND DRAG LINES

5—Traction and Caterpillar Shovels, including Erie, Bucyrus, Thew and Osgood.
1—Marion No. 31 Caterpillar.
1—Bucyrus 70-C Std. Ga.
1—Monighan Walker Type Dragline, 40-ft. Boom.
1—Bucyrus Dragline No. 14, 60-ft. Boom.

CRANES

1—O & S 15-Ton Std. Ga.
1—Type B Erie Traction Wheels.
1—31 Marion Traction Wheels.
1—Byers Auto Crane Traction Wheels.
1—Industrial 20-Ton, Std. Ga.

STEAM SHOVELS AND DRAGLINES

1—P & H No. 205.
1—Marion 60 shovel.
1—Marion 221 combination shovel and dragline.

STEEL TOWERS AND MISCELLANEOUS

1—¾-yd. Blaw-Knox Clam Shell Bucket.
1—Telsmith Jaw Crusher, 9 x 18 on Trucks with 22-ft. Bucket Elevator.
1—Eureka, 7 x 8 Jaw Crusher.
1—Insley 140-ft. Steel Tower with Spouting.
1—Insley 200-ft. Steel Tower with Spouting.
5—Centrifugal Pumps from 5 in. to 12 in.
1—Austin Rip Snorter.
1—Lakewod Tamping Machine.

We also have in stock Concrete Mixers, Clam Shell Buckets, Dump Buckets, Road Rollers, also complete line of Road and Building Equipment

OUR NEW ADDRESS:

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711 Standard Trust Bldg.

Telephone: Randolph 4184 **Chicago, Ill.**

LOCOMOTIVE CRANES

2—McMyler 25-ton, 8-wheel, 50-ft. booms, bucket operating, 7½ kw. generators, located Youngstown and Cincinnati.
1—McMyler 20-ton, 8-wheel, 40-ft. boom, bucket operating, located Youngstown.
1—Brownhoist 15-ton, 8-wheel, 50-ft. boom, single drum, 5 kw. generator, located Chicago Heights.
2—Ohio 20-ton, 8-wheel, 50-ft. booms, bucket operating.
1—Browning 15-ton, 8-wheel, 38-ft. boom, bucket operating.
1—Brownhoist 15-20-ton, 8-wheel, 42-ft. boom, hook block.
1—Industrial 7½-ton, 4-wheel.
1—Browning 4-wheel electric.

Hoisting Machinery Co.
50 Church Street, New York.

CRANES—COAL CARS

FOR SALE OR RENT

1—40-ton, 8-wheel Brown Hoist, 60-ft. boom.
1—30-ton, 8-wheel Browning, 50-ft. boom.
1—25-ton, 8-wheel Industrial, 50-ft. boom.
2—20-ton, 8-wheel Ohio, 50-ft. booms.
1—15-ton, 8-wheel Industrial, 40-ft. boom.

100—50-ton, standard gauge, all steel, hopper bottom, self-clearing, first-class condition, meeting M.C.B. requirements, ready for immediate service.
10—50-ton, standard gauge, all steel hopper bottom, self-clearing, built 1920, only slightly used, like new.

GREY STEEL PRODUCTS COMPANY

111 Broadway **Telephone, Rector 5542** **New York, N. Y.**

FOR SALE

AUTO CRANE

1—Rebuilt Byers, equipped with a ¾-yd. Owen Clam Shell Bucket. Boiler is steam, and Crane is on road wheels. 180 deg. swing, 30-ft. steel boom. Has same guarantee by the Byers Company as a new machine. Price, $3,000 for the outfit, f.o.b. Glens Falls.

LLEWELLYN-SMITH CONSTRUCTION CO.
M. & F. Bldg., Glens Falls, N. Y.

BYERS CRANE

Type C, traction wheels, 35-ft. boom, ¾-yd. bucket. For sale or rent.

HENRY LEVIS & CO.,
Commercial Trust Bldg., Philadelphia, Pa.

LOCOMOTIVE CRANES

15 ton Link-Belt, 4-wheel, 40 ft. boom.

20 ton Brown Hoist, 8-wheel, 50 ft. boom.

Bargains for Quick Sale

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1120 First Nat'l B'k Bldg., Pittsburgh, Pa.

For Sale

Terry Gantry Crane

(New)

Electrically operated
Boom 74 ft. Long. Capacity 40,000 lbs.

Samler Bros, Inc.
701 West St. **Baltimore, Md.**

LOCOMOTIVE CRANES

1—25-ton Industrial double drums, 50-ft. boom, 8-wheel M.C.B., built 1918.
1—30-ton Browning, double drums, 52-ft. boom, 8-wheel M.C.B., built 1919.
1—15-ton Industrial, double drums, 45-ft. boom, 8-wheel M.C.B., built 1917.
2—20-ton Brownhoists, single drums, 50-ft. booms, 8-wheel M.C.B., built 1918.
1—30-ton Ohio, boom, length to suit, double drums, NEW, 8-wheel M.C.B.
1—25-ton Ohio, boom length to suit, double drums, NEW, 8-wheel M.C.B.
5—7½-ton Osgoods, single drums, 35-ft., 40-ft. and 45-ft. booms, 4-wheel standard gauge railroad trucks, built 1918.
1—20-ton Brownhoist, single drum, 70-ft. boom, 8-wheel M.C.B., built 1915.
4—50-ton Industrials (never used), double drums, either goose-neck or straight boom furnished, 8-wheel M.C.B., built 1919.
1—10-ton Byers, full-revolving, double drums, 40-ft. boom, traction wheels, built 1921.

All the cranes listed above are owned by us and have been carefully inspected by a first-class crane mechanic and all necessary repairs made. They are all equipped with A.S.M.E. boilers and are ready for work.

Cortland 1501

PHILIP T. KING

The Crane Man

30 Church St., N. Y.

E. C. A. REBUILT EQUIPMENT AT ROCK BOTTOM PRICES

All the Equipment listed below is owned by us and may be inspected at one of our own warehouses.

CONCRETE MIXERS

58—Concrete Mixers, Sizes 28S, cap. 1 yd.; 21S cap. ¾ yd.; 14S, cap. ½ yd., and 10S, cap. 1/3 yd. With steam or electric power; with side loaders or batch hoppers. Following makes: Marsh-Capron, Koehring, Milwaukee, Ransome, Smith, Smith-Chicago, Rex, Lakewood, Foote, Cube, or Oshkosh.

30—7S, cap. 1 bag, with low charging platforms, with gasoline engines.

CRANES

3—Byers Auto Cranes. One on caterpillar; 2 on traction wheels, with 30-ft. boom, with ½ or ¾-yd. clam shell buckets.

1—15-ton, 8-wheel O. & S.; 40-ft. boom.

1—Little Giant fully revolving crane on traction wheels, with 35-ft. boom, with ¾-yd. clam shell bucket.

ELECTRIC HOISTS

Large number of American double drum Hoists, with attached swinger, with 37-hp. AC Motor, 60 cy., 3 ph., 220 or 440 v.

DERRICKS

Large number of American stiff-leg derricks with mast 16 in. x 16 in. x 40 ft., boom made up of 2—14 in. x 14 in. x 48 ft. spliced to lengths of 80 ft., with 1—Truss rods, Legs 14 in. x 14 in. x 62 ft. Bull wheel 16 ft. dia., with or without sills.

12—Stiff-Leg Derricks, with booms ranging from 50 to 80 ft.; mast, legs and sills in proportion, for handling ½, ¾ or 1-yd. buckets.

1—Dobbie Guy Derrick, mast 15 in. x 16 in. x 80 ft., Boom, 16 in. x 16 in. x 72 ft.

STEAM HOISTS

25—Three-drum Hoists, with or without boilers. Sizes 10 x 12, 9 x 10, 8¼ x 10, and 7 x 10 with separate swingers for derrick work. All makes.

35—Two-drum Hoists, with or without boilers. Sizes 10 x 12, 9 x 10, 8¼ x 10, 7 x 10, 6¼ x 10, 6 x 8, and 5 x 8. Can be equipped with holding drum for bucket work. Several special Cableway Excavator or Drag Scraper Hoists. All makes.

6—Gasoline Hoists. Single and Double Drum, 6, 10, and 15-hp. engines.

6—Swinging Engines.

1—Double Drum Belt Hoist, cap. 6000 lb.

CLAM SHELL BUCKETS

32—Clam shell buckets. Sizes ½, ¾, 1, 1½, or 2 yd. All makes.

RAIL AND TRACK

2 Miles, 24-in. Gauge Portable Track with steel ties, made up of 20-lb. rail with switches.

PUMPS

Large number of pumps: DIAPHRAGMS, on trucks, 3-in. and 4-in. suction with gasoline engine. CENTRIFUGALS, from 12-in. suction down to 2-in. suction, belt driven, dir. conn. to steam engine and motor. Several Nye and Pulometers.

STEAM SHOVELS

1—Bucyrus, 70 ton, on M.C.B. std. gauge trucks, with 2½-yd. dipper.

2—Keystone Excavators, 1—No. 3, 1—No. 4 with clam shell booms.

1—Marion No. 28 Traction Wheels, ¾-yd. bucket.

2—Erie Type B with ¾-yd. dipper; one with High Lift Boom.

1—Type B Erie Crane on caterpillar with ¾-yd. bucket.

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New Water Tube Boilers, built for pressures of 200 lbs. and 225 lbs., ready for immediate delivery from Chicago; Dumont, New Jersey, opposite New York City; or Slidell, Louisiana, near New Orleans.

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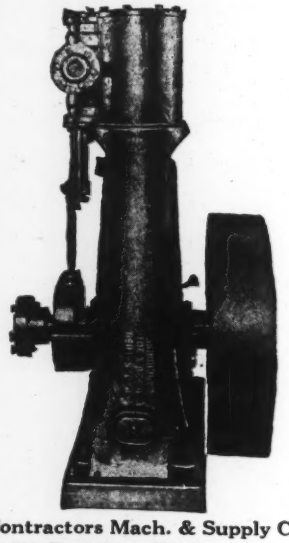

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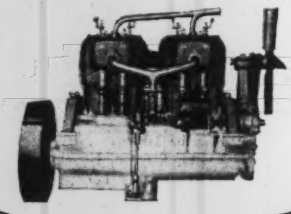

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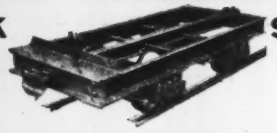
TRACK  SWITCHES

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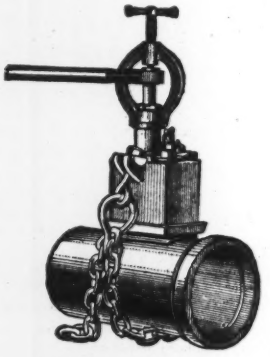

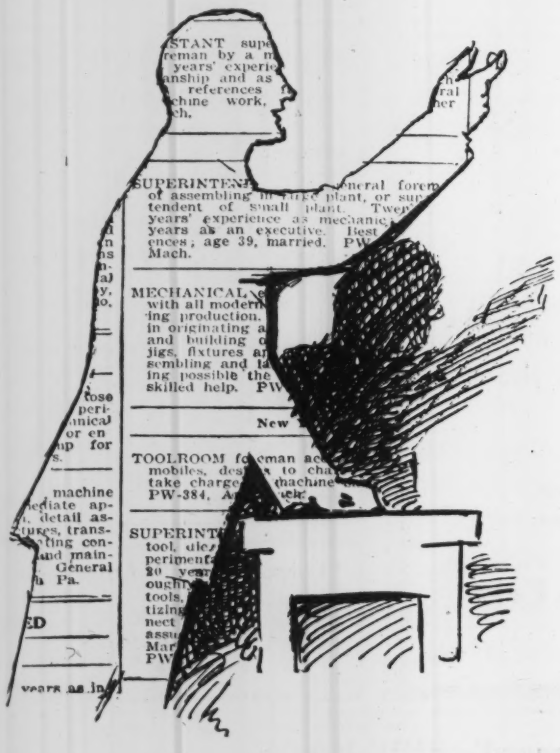

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For Exchange	Specialties
For Rent	Sub-Contracts Wanted
Franchises	Water Front Property
Help Wanted	Work Wanted

Miscellaneous for Sale, for Rent or Want Ads

For Every Business Want "Think SEARCHLIGHT First"

0194

We Make Millionaires
That's Why Our Customers Are Millionaires

Did you ever stop long enough over our advertisements during the past months to notice who our customers are?

Do you know that hundreds not to say thousands of the executives of the Biggest Corporations turn to the Ridgway ad every issue just to "catch the Ridgway pep and inspiration"?

One of the Carnegie folks once said to "Old Hook 'er" "The old man always turns to the Ridgway stuff the first thing when the paper comes in and I often hear him chuckle over the way you put things."

The Editor of one of the Big Trade Papers said:—"Ridgway, you have a lot more readers than I or any one else in the paper has."

The reason they read Ridgway is because

WE POINT THE WAY TO SUCCESS.

The same Poor Quality Brain that will turn down the Ridgway Elevator will run the concern he is supposed to guide into the ditch.

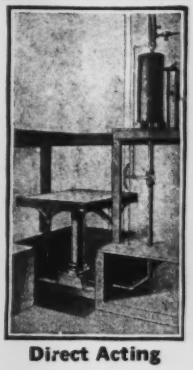
Real Ability with steam available will never put in the always-out-of-order, always-need-repairs, the going-into-the-overhead, the "consarn-it-there-she-goes-again," the $120-a-year inspection "to keep her going," winding elevator when he can get PERFECTION IN ELEVATORS IN A RIDGWAY.

Don't you believe it? Well, ask these fellers about it:

United Gas Imp. Co.	H. J. Heinz Co. "57"	United States Government
Yale & Towne Mfg. Co.	International Harvester Co.	E. I. Du Pont & Co.
Cluett, Peabody & Co.	John Wanamaker	General Electric Co.
Consolidated Gas Co.	Remington Typewriter Co.	Packard Motor Car Co.
Nat'l Cash Register Co.	Continental Gin Co.	Continental Can Co.
Hammermill Paper Co.	Erie Railroad Co.	American Tobacco Co.
Procter & Gamble Co.	Crane & Co. (Dalton)	John Morrell & Co.

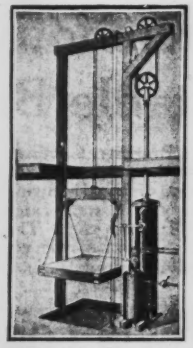
Just go over this bunch from the Prosperity point of view. Well I guess so. And we have 3000 more like them who

"HOOK 'ER TO THE BILER"
CRAIGE RIDGWAY & SON CO., Coatesville, Pa.
ELEVATOR MAKERS TO FOLKS WHO KNOW

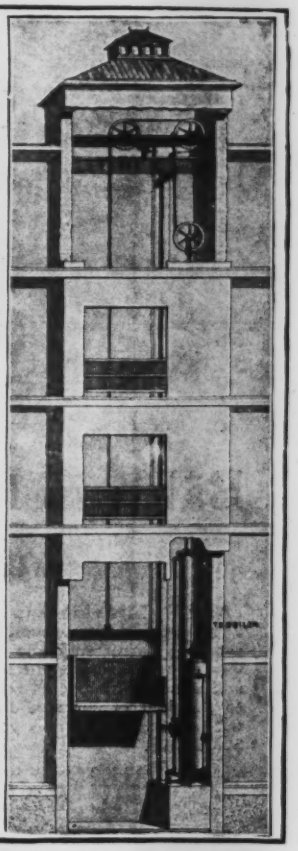


Direct Acting

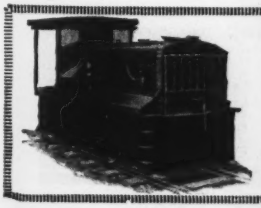
Over 3000 in Daily Use



Double Geared



Specialists
in the
DESIGN AND MANUFACTURE
of
Standard—Insulated Compromise Rail Joints
THE RAIL JOINT COMPANY
61 Broadway, New York City



PLYMOUTH
Gasoline Locomotives
For all Industrial Haulage

Ask for Bulletins

THE FATE-ROOT-HEATH CO.
Plymouth, Ohio, U. S. A.

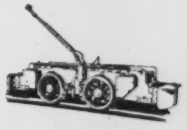
Ramapo Iron Works
Established 1881

Ajax Forge Company
Established 1883

RAMAPO AJAX CORPORATION
Successor
HILLBURN, NEW YORK
Chicago New York Superior, Wis. Niagara Falls, N. Y.
Switches, Frogs, Crossings, Etc.
Ajax Rail Braces and Manganese One-Piece Guard Rails
Ramapo Automatic Safety Switch Stands

WHITCOMB LOCOMOTIVES

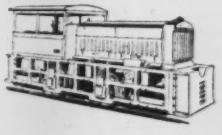
A type for every project

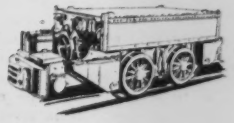


A size for every job

Locomotives
Gasoline
Storage Battery
Trolley
Combination

The Thousands of Whitcomb Locomotives in successful operation speaks for the thoroness of their design and construction.





Write for Bulletins covering the type you are interested in.

Geo. D. Whitcomb Company
Rochelle, Illinois, U. S. A.

Baldwin Six-Wheeled Switcher used in Brazil. Gauge, 4 ft. 8½ in. Cylinders, 13 in. by 18 in. Working pressure, 160 lbs. Driving wheels, diameter, 37 in. Weight, 67,000 lbs. Fuel, coal.

Baldwin locomotives employed in a notable Brazilian engineering project

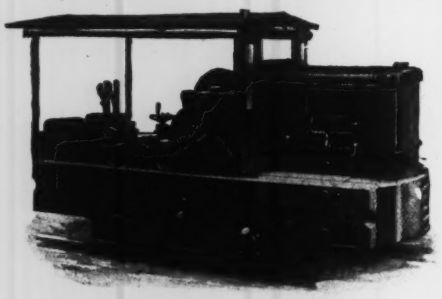
AMERICAN visitors to the Brazilian Government's International Exhibition at Rio de Janeiro, will be interested in witnessing the work of the Baldwin locomotives used in the razing of the Morro do Castello ridge, which will add about 150 acres of ground to the city. This ridge rises to a height of 200 feet and the cost of the project, which will require about two years to complete, is estimated at $6,000,000.

When the contract for this great improvement was awarded to Leonard Kennedy & Co., Inc., of New York, an order for the building of four locomotives, as illustrated, to be completed in 30 days, was given to us. These locomotives are now in service.

Baldwin Contractors' locomotives are always to be depended upon in any kind of work.

THE BALDWIN LOCOMOTIVE WORKS, PHILADELPHIA

887



AMERICAN GASOLINE LOCOMOTIVE

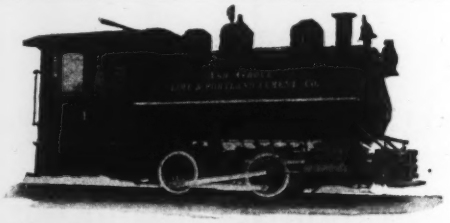
"Never Mind the Weather"

Keep down your material haulage costs. Operate an American Gasoline Locomotive to bring up sand, rock, brick, wet aggregates and excavated material, etc. Impassable roads or bad weather won't slow down the job. All that is required to handle the loaded and empty cars are a track and a little gasoline and oil. Built in various sizes and gauges. It is powerful, simple as a Ford to run, sturdy and satisfactory in every respect.

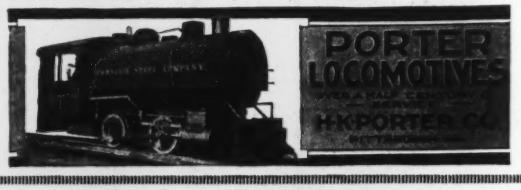
Built in 3½, 4 and 7 ton sizes.

THE HADFIELD-PENFIELD STEEL CO.
BUCYRUS OHIO

Branch Offices: New York and Chicago

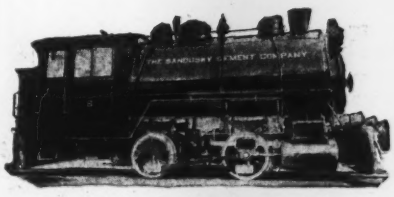


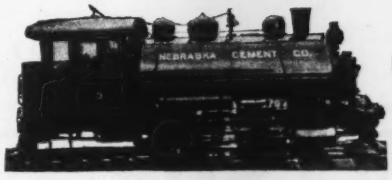
All sizes and types of light steam
LOCOMOTIVES
ROD AND GEAR-DRIVE
Davenport Locomotive Works
Davenport, Iowa



MILWAUKEE LOCOMOTIVE MFG. CO.
GASOLENE LOCOMOTIVES
For Mine and Industrial Haulage
MILWAUKEE, WIS., U. S. A.

VULCAN INDUSTRIAL LOCOMOTIVES and leading Industrial Concerns





The Cement Industries

THESE Vulcan Locomotives are only representative of the many built for the cement industries located in every cement manufacturing state in the United States and Canada.

Vulcan Locomotives are also used by cement plants in foreign countries from Cuba to Japan.

Of the many cement companies now in the United States more than half are equipped with Vulcan cement machinery.

No matter where your plant may be situated or what your peculiar requirements may be, Vulcan's wide experience is capable of producing the best for your requirements.

VULCAN IRON WORKS

Established 1849

1737 Main Street **Wilkes-Barre, Pa.**

Stanolind Paving Asphalt

The Ideal Country Road

VERY few pavements have the hard wearing traffic that falls to the lot of the average country road. Automobiles and trucks, tractors and wagons, loaded and unloaded all conspire to effect its destruction.

To stand up under these trying conditions the road must be constructed to meet them. A substantial subgrade—a firm base and a shock-absorbing wearing course are the three factors essential to any road where traffic impact is heavy.

Stanolind Paving Asphalt

provides an ideal material for the construction of such roads. It is laid at a low initial first cost and requires a minimum of maintenance. This latter feature is important because money allowed by the tax payers usually does not provide for a large upkeep expense.

Hundreds of miles of country roads constructed by the Stanolind method years ago, are still in the best of condition although very little has been spent on them for repairs. We will gladly cite instances and supply details on request.

A new booklet recently issued by us tells the latest methods of constructing and maintaining bituminous pavements. Sent free to engineers and community officials who request it on their official stationery.

"See our instructive exhibit on road making at Booths 9 and 10, second floor Ballroom, Good Roads Show, Chicago, January 15-19, 1923"

STANDARD OIL COMPANY
(INDIANA)
929 SO. MICHIGAN AVE. CHICAGO, ILLINOIS

STANDARD *Asphalt Products*

Standard Asphalt Binder A *for surface treatment.*
Standard Asphalt Binder B *for penetration work.*
Standard Asphalt Binder C *for the mixing method.*
Standard Refined Mexican Asphalt *for sheet asphalt paving.*
Standard Asphalt Joint Fillers *for brick or block pavements.*
Standard Paving Flux, Standard Bridge Asphalt and Preserving Oils.

STANDARD OIL CO. OF NEW YORK
26 Broadway

Specifications and all other particulars furnished on request.

SOCONY
ASPHALTS AND ROAD OILS

Tar and Asphalt Heaters

Steel Stacks
Sand Dryers
Tool Heaters
Boiler Breechings
Welded or riveted Tanks

THE JOS. HONHORST CO.
1020 W. Sixth Street, Cincinnati, Ohio

WATSON

LOW COST HAULAGE
WATSON PRODUCTS CORPORATION
CANASTOTA, N. Y.

Dump Wagons
Ash Wagons
Asphalt Wagons
Motor Trucks
Tractor Trucks
Auto Trailers

LITTLEFORD

TAR AND ASPHALT HEATERS
FOR CONTRACTORS AND MUNICIPALITIES
CATALOG ON REQUEST
LITTLEFORD BROS.
415 E. PEARL ST. CINCINNATI, O.

RHODE ISLAND AND TEXACO

TEXACO Asphalt Macadam pavement on the Post Road, between Providence and New London, R. I. Laid 1915

What is the State Highway pavement in Rhode Island?

At the beginning of the present year, 97% of the paving higher than waterbound macadam was of the bituminous types.

94% of the total mileage of Federal Aid Projects completed in this State up to 1922 also have been constructed with bituminous paving.

TEXACO Asphalt pavement on Putnam Pike, Rhode Island, showing section near Centerdale

How logical was the decision of Rhode Island in selecting this paving is evidenced by the fact that miles of bituminous construction laid twelve and fifteen years ago are affording today the same fine service that characterized their first years under traffic.

TEXACO Asphalt pavements have carried Rhode Island State highway traffic since 1909 so effectively that annual maintenance expenditures have been extremely low in most instances, and in some years have been conspicuous by their absence.

TEXACO

The Texas Company

Asphalt Sales Dept., 17 Battery Pl., New York City

New York Philadelphia Richmond Boston Jacksonville Atlanta New Orleans Memphis Chicago Cleveland Oklahoma City Kansas City Houston Minneapolis Dallas

A Structural Necessity

MESH reinforcement for concrete is an essential on every big engineering job. Clinton Electrically Welded Wire Fabric has earned the right to be classified as the ideal mesh reinforcement through twenty years of continuous service in which it has met every requirement and actually exceeded expectations.

Cross-members of this rectangular mesh are electrically welded at points of intersection, practically converting the whole into a single, homogeneous unit of steel strength. It distributes concentrated loads automatically.

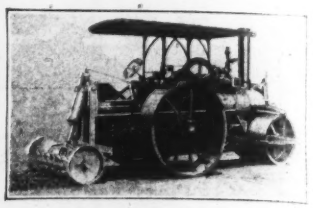
Catalogs upon request

Wickwire Spencer Steel Corporation
Liggett Bldg., 42nd St. and Madison Ave., New York
Worcester Buffalo Detroit Chicago San Francisco

QUALITY ROLLERS
"Buffalo-Pitts" and "Kelly-Springfield"

In all types and sizes, steam and motor.

Buffalo - Springfield Pressure Cylinder Scarifiers can be built on new rollers or attached in the field to rollers already in service.



Inquiries Invited.

The Buffalo-Springfield Roller Co.
Springfield, Ohio

BUILT STRONGER LASTS LONGER

G-W MATERIAL HANDLING EQUIPMENT

Portable belt conveyors, wagon loaders, pivoted bucket carriers, belt conveyors, and other elevating and conveying equipment of all types.

Catalog upon request.

Gifford-Wood Co.
WORKS HUDSON N.Y.
NEW YORK-CHICAGO BOSTON-BUFFALO

Hydraulic Hoists and Steel Bodies

Wood-Detroit equipment in use exceeds all other makes combined. Installed on any chassis. See page advertisement in December 7th issue.

Wood Hydraulic Hoist & Body Co.
7924 Riopelle Street Detroit, Mich.

STROUD "Little Red" Dump Wagons

Holds 20 Per Cent More Dirt—Easiest Running — Largest Skeins — Quickest Dumping — Simplest Chains — Easiest Loading—Best Balanced—Heaviest Hubs —Widest Tires—Strongest Front End Construction—Strongest Arch.

Write for Catalog

STROUD & CO., Omaha

THE SCOOP CONVEYOR
THOUSANDS IN USE
FOR STORING AND RECLAIMING, LOADING AND UNLOADING CARS, TRUCKS AND WAGONS
DOES THE WORK OF FROM 6 TO 12 MEN
AND KEEPS EQUIPMENT MOVING!
WRITE FOR LITERATURE
PORTABLE MACHINERY CO., PASSAIC N.J.

STAR BRAND BLOCKS
Are Standard

For any lift or difficult working condition they are safest, strongest and most durable.

Boston & Lockport Block Co.
108 Condor St., East Boston, Mass.
New York City 33 South St. Chicago 413 Fort Dearborn Bldg.

Takes 1200 people to publish them

A PASTE-POT and shears, wielded by a couple of editors and an office boy? No, the McGraw-Hill papers aren't published on that basis.

It takes 1200 men and women to edit and publish these thirteen journals. That is one reason why each is dominant in its peculiar sphere of civil, mining, chemical, mechanical or electrical engineering.

THE 13 McGRAW-HILL PUBLICATIONS

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Power
Coal Age
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Journal of Electricity
Electrical Merchandising
Electric Railway Journal
Engineering News-Record
Bus Transportation

F-4

20 H. P. Cushman On Road Grader

For jobs requiring unusual dependability, steadiness and freedom from trouble, manufacturers of power-driven machines find it pays to equip with Heavy-Duty, Light-Weight

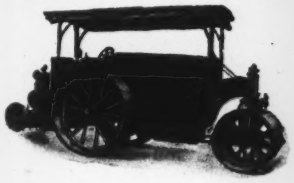
Cushman Engines

We are interested in inquiries from manufacturers who need a high-grade motor to complete their power outfits.

Sizes 1½ to 20 hp.

Cushman Motor Works
801 N. 21st St. Lincoln, Nebr.

REDUCE YOUR OPERATING COSTS



through the use of

ACME EQUIPMENT

Four-cylinder Motor Road Rollers

Portable and Stationary Crushing Plants
Gravel Screeners—Graders
Power Scarifiers

ACME ROAD MACHINERY COMPANY
Factory: Frankfort, N. Y.
Warehouse Distributors in all principal cities.

WESTERN DUMP WAGONS

Western

If you want a light-running but unusually strong dump wagon, there's no question but that the Western will exactly suit you. Ask any experienced contractor what he thinks of the Western wagon. Westerns have proven their worth the world over. Let them work for you.

Write today for our catalog

WESTERN WHEELED SCRAPER COMPANY
Earth and Stone Handling Equipment
Aurora, Illinois

Only reliable products can be continuously advertised.

Just Published!

DEPRECIATION OF PUBLIC UTILITY PROPERTIES

By Henry Earle Riggs, C. E., Professor of Civil Engineering, University of Michigan.

211 pages, 5½ x 8, $2.00, postpaid

THIS book sets forth the new problems in valuation and depreciation of public utility properties brought about by the price fluctuations of 1914 to 1921.

The book gives special attention to the effect of the fluctuating price level upon the items of "depreciation," "fair value," "obsolescence," etc.

Professor Riggs traces briefly the history of the regulation of utilities, gives his own interpretation of the distinction which must be made between the replacements necessary because of wear and tear, and actual loss of value, and points out certain important conclusions of the courts with which every one engaged in valuation work should be familiar.

The digest of cases from the higher courts is divided into three periods; those in the earlier stages of regulation, those in the period following the adoption of uniform accounting, and those since the beginning of the war in 1914.

The author's views and conclusions are the development of twenty years of practice in valuation work.

CONTENTS

I.—The Problems of Regulation. II.—Investment in Public Utility Properties. III.—The Interest of the Rate Payer in the Property. IV.—Operating Expenses. V.—War Period Price Fluctuations. VI.—Fair Value and the Rate of Return. VII.—Fluctuating Prices and Accounting Allowances for Replacement. VIII.—Supreme Court Decisions Bearing on Depreciation. IX.—Divergent Views as to the Propriety of Accounting Reserves. X.—The Uncertain Character of Depreciation Estimates. XI.—Depreciation—Loss of Value Which Should Be Deducted. XII.—Obsolescence. XIII.—Conclusion. APPENDIX. Depreciation in the Decisions of the Supreme Court and of the United States Courts.

Examine it for 10 days FREE!

FREE EXAMINATION COUPON

McGraw-Hill Book Company, Inc.,
370 Seventh Avenue, New York.

Send me on 10 days' approval **Riggs' Depreciation of Public Utility Properties.** I agree to return the book prepaid or remit $2.00 within 10 days of receipt.

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Signed .....

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(Books sent on approval to retail purchasers in U. S. and Canada only.)

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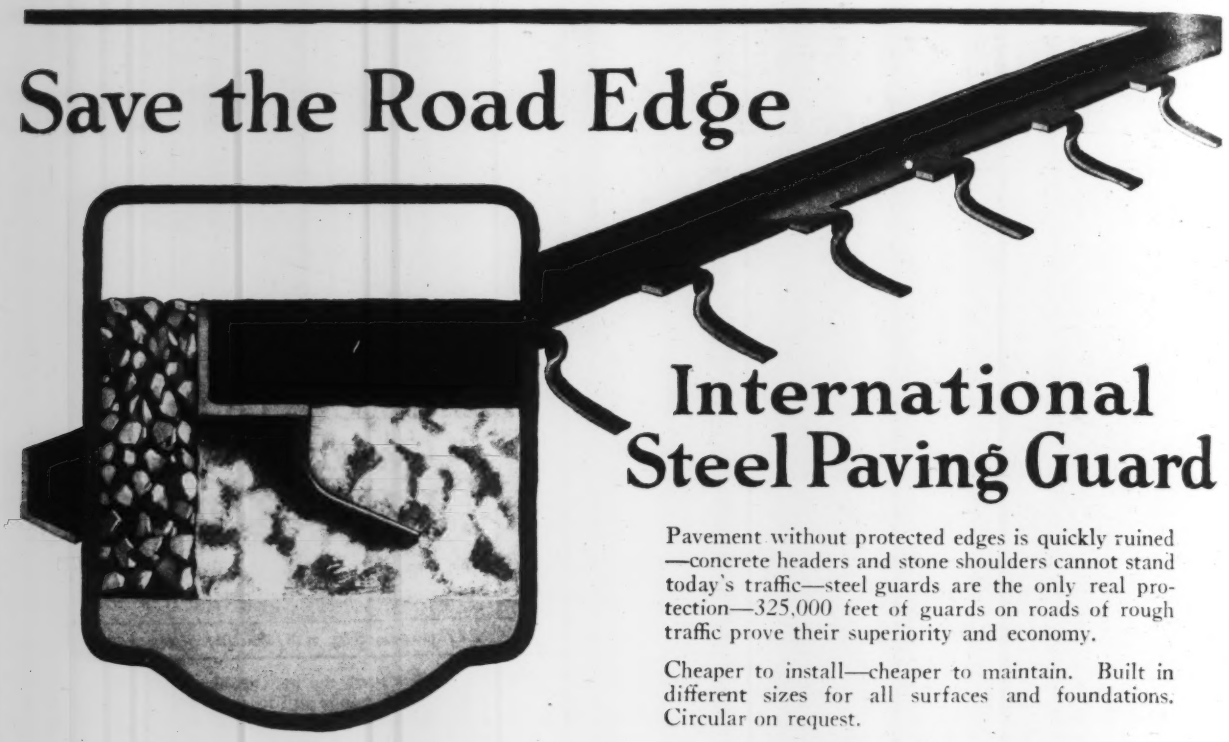
Save the Road Edge



International Steel Paving Guard

Pavement without protected edges is quickly ruined —concrete headers and stone shoulders cannot stand today's traffic—steel guards are the only real protection—325,000 feet of guards on roads of rough traffic prove their superiority and economy.

Cheaper to install—cheaper to maintain. Built in different sizes for all surfaces and foundations. Circular on request.

International Steel Tie Co.
Cleveland, Ohio

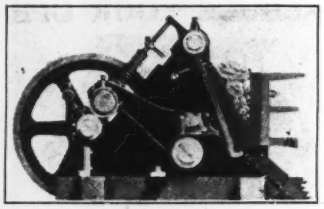
HELTZEL STEEL FORMS

for concrete roads, curbs, gutters, and sidewalks.

Very simple: a rail, a pedestal, a stake —that's all. Used by leading contractors. Catalog No. 17 is ready for you.

The Heltzel Steel Form & Iron Company, Warren, Ohio

Reliance Road Building and Quarry Equipment



Have established a reputation for continuous SERVICE and satisfaction.

We manufacture a complete line including *Crushers, Elevators, Screens, Bins, Sweepers, Car-Unloaders, etc.* Write for Catalogue.

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Kingston, N. Y.
141 Milk St., Boston, Mass. 114 Liberty St., New York, N. Y.
"RELIANCE" LABOR SAVING MACHINERY

FREE Information, Specifications and Literature, Expert Engineering Advice about

GRANITE

FOR PAVING AND CURBING

The Granite Paving Block Mfgrs. Assoc. of the U.S. Inc.
31 State Street, BOSTON, MASS.
Representing The World's Greatest Granite Quarries

Creo-pine BLOCK FLOORS

FLOORS THAT LAST!

Creo-pine Block Floors outlast the plant and effect maximum floor economy. Assure freedom from floor repair or replacement costs.

Southern Wood Preserving Company, Atlanta, Ga.

Creo-pine **conduit, cross arms, fence posts, cross ties, timber and piling.**

SERVICISED REG. U.S. PAT. OFF. © 1918 LOOK FOR IT ON ALL PURCHASES © 1920

SERVICISE THE CREVICE AND SAVE THE ROAD WITH

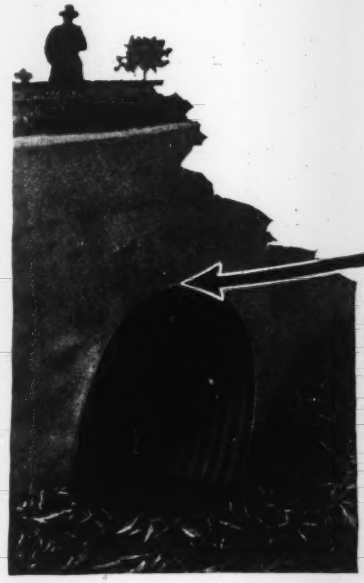
NON-OOZING EXPANSION JOINTS

TYPE "AA" "D" "C" "B"

write SERVICISED PRODUCTS CO. 1st National Bank Bldg., Chicago.

No guesswork about durability

Actual size photo of date tag used on each ARMCO CULVERT



This date tag

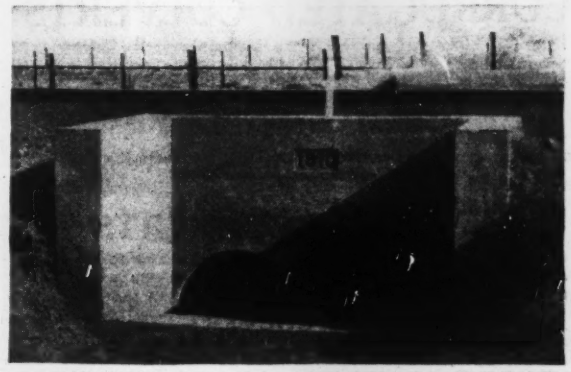
—an added mark of confidence in lasting service—is now used at the upstream end of all

ARMCO CULVERTS

giving you an opportunity to check definitely the durability of rust-resisting Armco Ingot Iron, of which these culverts are made.

This identifying symbol has been inaugurated by the makers of Armco Culverts. Be sure that your corrugated culverts are tagged with the Armco name and date, and avoid substitution of inferior metals.

In service since 1909 under the Dixie Highway



In perfect condition after twelve years' service

"If it is not an Armco Culvert, it will not give Armco service"

There is a manufacturer in nearly every state, and in Canada, making genuine rust-resisting ARMCO CULVERTS and other products of Armco Ingot Iron such as flumes, siphons, tanks, road signs, roofing, etc. Write for full information and nearest shipping point on products in which you are interested.

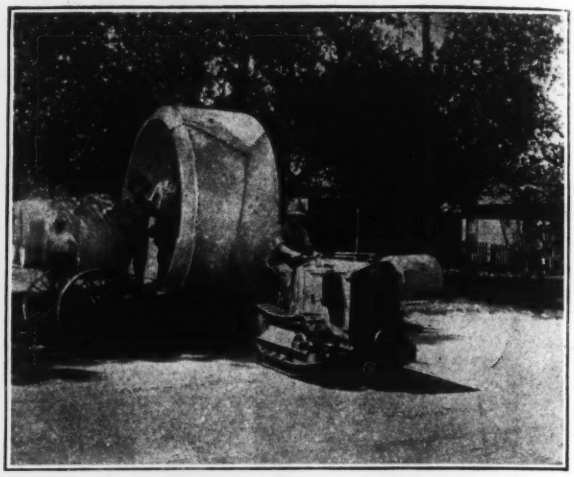
ARMCO CULVERT & FLUME MFRS. ASSN.
215 NORTH MICHIGAN AVE. CHICAGO

The Independent Concrete Pipe Company is equipped

to supply your demand for Reinforced Concrete Pipe

at any speed

"The Independent Concrete Pipe Company is equipped to supply your demand for Reinforced Concrete Pipe at any speed. Independent Reinforced Concrete Pipe is built or delivered along the line of trench wherever practical. Glance at the photograph inserted here and note our method of delivering 96-in. Pipe. Also note the clean-cut spigot end of our pipe. Independent Concrete Pipe joints are designed to permit ease in making. Consult our Estimating Department for prices. Send for Booklets."



Note method of delivering 96-in. pipe built for Oklahoma City, Oklahoma.

INDEPENDENT CONCRETE PIPE COMPANY
201 No. West St., Indianapolis, Ind.

STANDARD CONCRETE PIPE COMPANY, Inc.

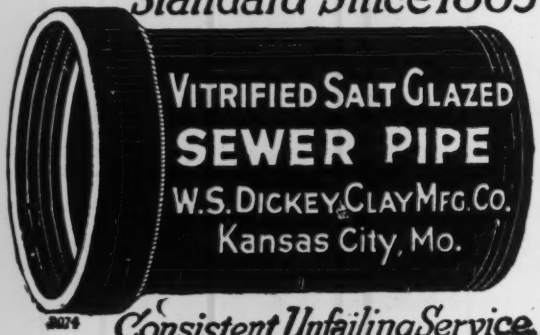
Manufacturers of
Machine Made Concrete Pipe and Branches
(tamp process)
103 Park Avenue, New York
Telephone, Murray Hill 10140
Largest Manufacturers on East Coast

Used in over 400 Cities in the United States over 70 million ft. in the ground.

Meets all requirements of the American Society for Testing Materials.

All Sizes in Stock—Prompt Service. Let Us Estimate on Your Reequirements.

Standard Since 1885



Consistent Unfailing Service

CORRUGATED CULVERTS

"ACME" (Nestable) and IMPERAL Riveted Corrugated Culverts. Made of anti-Corrosive Toncan Metal. Write for prices.

THE CANTON CULVERT & SILO CO.
MANUFACTURERS
CANTON, OHIO, U.S.A.

NEWPORT CULVERTS

of Genuine Open Hearth Iron, with a proper admixture of Copper and generous coating of Spelter, are daily making new friends and substantiating our claims for superior strength and durability.

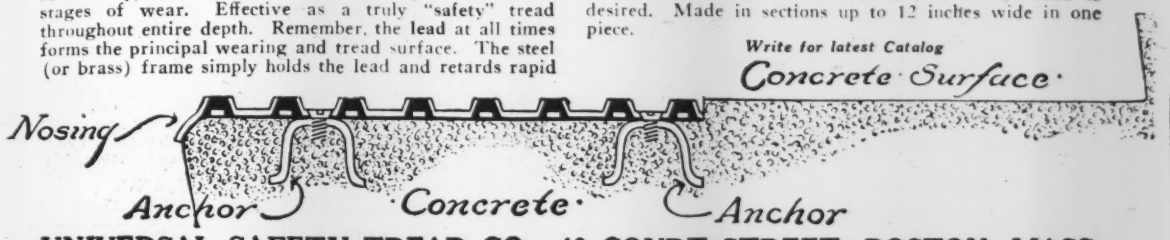
THE NEWPORT CULVERT CO., INC.
641 West Tenth St., Newport, Ky.

UNIVERSAL SAFETY TREAD

STEEL OR BRASS FILLED WITH LEAD

A non-slip, non-removable lead surface presented at all stages of wear. Effective as a truly "safety" tread throughout entire depth. Remember, the lead at all times forms the principal wearing and tread surface. The steel (or brass) frame simply holds the lead and retards rapid wear. Can be used wherever a real safety tread is desired. Made in sections up to 12 inches wide in one piece.

Write for latest Catalog



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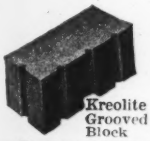
KREOLITE WOOD BLOCK FLOORS

"Outlast the Factory"

An excellent investment for machine shops, loading platforms, foundries, warerooms, pickling rooms and other parts of the plant where the floors receive hard wear.

Write today for our booklet—
"Kreolite Factory Floors."


Kreolite Grooved Block

We also furnish Kreolite Wood Blocks for Street Pavements, Bridge Floors and Stable Floors, treated ties, piling timbers, fence posts, etc., framed to your plan, if desired, before treatment.

The Jennison-Wright Co.
79 Kreolite Bldg., Toledo, Ohio

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TIMBER

15,000,000 feet always in stock for immediate delivery

THE MOST EFFICIENT TIMBER-HANDLING PLANT IN THE WORLD

LAWSON & MacMURRAY

HOBOKEN OFFICES, MILLS AND YARDS **NEW JERSEY**

WE CREOSOTE railroad ties, piles, poles and wood paving blocks in any quantity at our NEWARK, N. J., plant. We can make deliveries at the buyer's convenience, as we keep a large stock of untreated material on hand. Our prices will satisfy you. American Creosoting Company, 17 Battery Place, New York.

WOOD PRESERVATIVES

Protexol

All grades and to any desired specifications. Protexide—a colorless and odorless preservative. Full information on all questions especially for surface treatments based on 35 years of experience. Shipping Depots, Pittsburgh, Chicago, and St. Louis.

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Successor to
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Works: Kenilworth, N. J.

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INCORPORATED
New Orleans, La. (Station B)

Creosoted cross arms, Lumber, Paving Blocks, Piles, Poles and Ties.
Private free wharf for ocean vessels at New Orleans.
Capacity 100 million feet board measure annually.

Plants at New Orleans, La., Louisville, Miss., and Winnfield, La.

Piles, Timbers
Cross Ties

AM CRE CO
Lowry Process
Creosoted Wood

Piling, Lumber
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CREOSOTING WORKS

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MANUFACTURERS, *Lumber, Piles, Poles, Ties, etc.*

The Wyckoff Pipe & Creosoting Co., Inc.
General Creosoters—Established 1881.

Creosoted Wood Block, Conduit, Cross-Arms, Anchor Blocks, Poles, Cross-Ties, Piling, Wharf Timbers, Bridge Timbers, Lumber, etc., Water Pipe, Steam Pipe Casings, Liquor Log.

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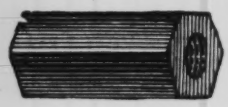
Factory: Portsmouth, Virginia

Keystone Gypsum Fireproofing Corporation

METROPOLITAN SYSTEM

of Floor and Roof Construction

Main Office: Marbridge Bldg., New York City



HEX Coupling for bolting forms true to line and for joining round rods.

THIS MARK

On a Casting

—means that it's made of Marion certified malleable iron, offering great resistance to shock, having high elastic limit, resisting oxidation, wears better, is free from slag holes, shrinkage, cracks, etc., and is not subject to fatigue or crystallization.

Certified malleable castings for every purpose

The Marion Malleable Iron Works

Marion, Indiana

SONNEBORN PRODUCTS

No More Leaky Roofs

Stormtight, the National Roof Protector keeps good roofs watertight and makes old roofs leakproof for many years.

Stormtight

does not crack like ordinary roof paints and cheap roof cements. It furnishes a thick, rubberlike coating which does not crack or run under heat or cold.

Use Stormtight this fall—It will pay you.

Every drop spreads protection.

Write for booklet "Leakproof Roofs" and testimonials

L. SONNEBORN SONS, INC.
Dept. 6, 116 Fifth Avenue, New York

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MISSISSIPPI WIRE GLASS

For protection against Fire and Breakage

Mississippi Wire Glass Co.
218 Fifth Ave.,
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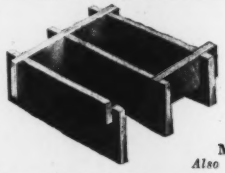
STEEL CONSTRUCTION FOR LIGHT AND VENTILATION IN BUILDINGS

SIDE WALL STEEL SASH

All types for factory, power house and office. Continuous steel sash for monitors and sawtooth construction. Operating devices for all types of movable sash and doors. Steel skylight and ventilators, steel office partitions, hinged steel doors, sliding steel doors.

ALLISON STEEL PRODUCTS CO.
CHESTER, PA.



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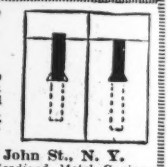
INTERLOCKED GRATINGS

No bolts. No rivets. No bent metal. Every joint locked by metal spread in dovetail. No clogging. Write for data. See half page advertisements.



Mitchell-Tappen Co., 15 John St., N. Y.
Also makers of "S.M.C." Standardized Metal Caging.

Steelcrete

CONCRETE REINFORCEMENT

EXPANDED Metal versus Bars—a Booklet of facts for every Concrete Engineer—free.

The Consolidated Expanded Metal Co's
BRADDOCK, PA.
Pittsburgh Chicago Phila. New York

KERLOW

222-238 Culver Ave., Jersey City, N. J.

GRATING PRODUCTS

100% Efficient (for traction) 78% Open (for ventilation)
100% Steel (for strength) 22% Surface contact (for comfort)
Two work Surfaces (for longevity)

NEMCO PRODUCTS

Kno-Burn

EXPANDED METAL LATH

Northwestern Expanded Metal Co.
900 Old Colony Bldg. Chicago

MARKS SYSTEM GYPSUM ROOFS

MARKS SYSTEM
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GYPSUM ROOFS

The "ANTI-PLUVIUS" Puttyless Skylight

Structurally perfect in its every detail. Send for catalogue No. 20-E.

The G. Drouvé Company
Bridgeport, Conn.

Rogers Timber Clamps

"Wherever you splice" shoring and scaffolding.
See our full page advertisement in the December 7th issue.

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Manufacturers and Distributors
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LACLEDE STEEL COMPANY
St. Louis, Mo.
CONCRETE REINFORCING BARS

Works:
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General Offices:
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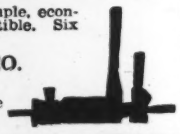
UNIVERSAL FORM CLAMPS

For all kinds of concrete forms. Speedy, simple, economical, secure. Low in first cost. Indestructible. Six sizes. Write for free sample and prices.

UNIVERSAL CLAMP CO.
15 N. May St., CHICAGO
George Bendixen, Representative
51 East 42nd St., N. Y.

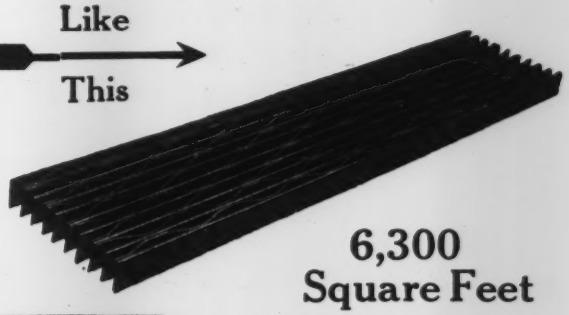


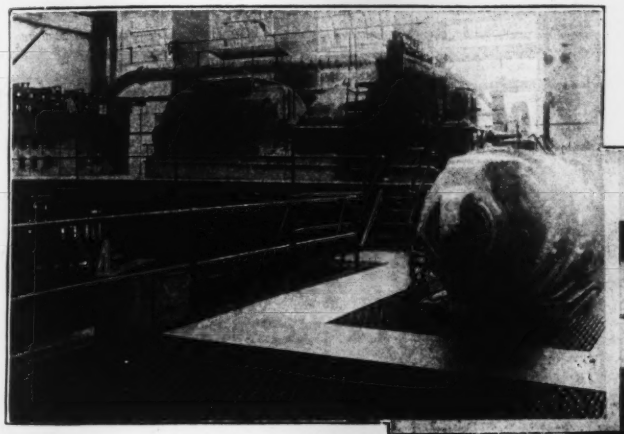
Safety, Comfort and Efficiency Assured in This Industrial Power Plant

By Using

IRVING SUBWAY TRADE MARK (PATENTED) REG. U.S. PAT. OFF.
THE FIREPROOF VENTILATING FLOORING

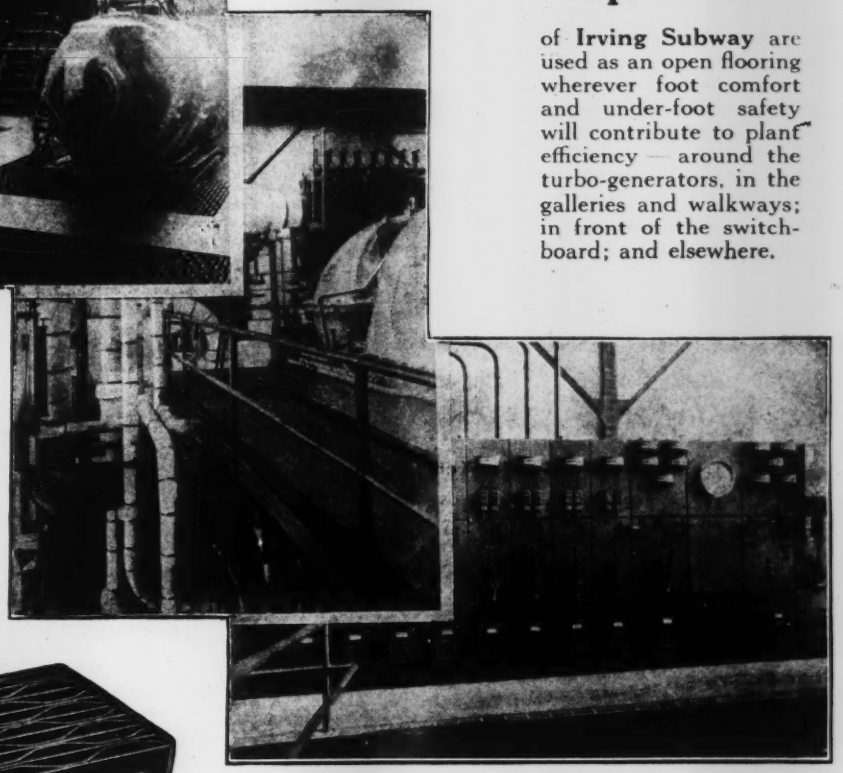
Like → **This**





6,300 Square Feet

of **Irving Subway** are used as an open flooring wherever foot comfort and under-foot safety will contribute to plant efficiency — around the turbo-generators, in the galleries and walkways; in front of the switchboard; and elsewhere.



And the stairways to galleries and between levels in the power plant are made safe and comfortable with

125

IRVING SAFSTEP TRADE MARK (PATENTED) REG. U.S. PAT. OFF.
ABSOLUTELY NON-SLIPPING ALWAYS

Like ↓ **This**

These pictures are interiors of the Lindale (Ga.) plant of the Massachusetts Cotton Mills, John A. Stevens, Engineer, where no detail was neglected that would make for high efficiency. It is but another instance of the increasing use of **Irving Subway** and **Irving Safsteps** in the industrial world—wherever a smooth, cool, safe, comfortable floor is wanted, to walk or work or wheel upon, indoors or out. The narrow, edge-on steel members grip the foot unfailingly—even when polished bright with use—even with water, ice, oil or grease upon them. And their first cost is their last cost—there are no after-costs. Let us send Catalog 3A5.

IRVING IRON WORKS CO.
LONG ISLAND CITY, N.Y., U.S.A.

INFORMATION GLADLY FURNISHED

FOR CORRECT METHODS OF USING CONCRETE

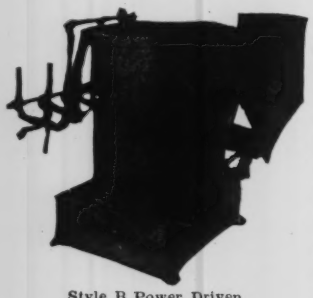
VULCANITE PORTLAND CEMENT CO

PHILADELPHIA BOSTON NEW YORK

Get All the Cement You Pay For

A bag of cement goes back to the mill in each 100 empty bags.

The time and labor spent in cleaning by hand is ineffectual and costly.



Style B Power Driven

This machine will save an average of 42 lbs. of cement after 100 bags have been cleaned by hand.

Users are paying for this machine from reclaimed bags alone. Saving of cement, freight time and labor are extra profit.

Further information and prices will be mailed you on request.

The Willsea Works

Successor to Century Cement Machine Co.

Builders of special machinery. The Hercules Concrete Block and Trimming Stone Machine.

60 Browns Race, Rochester, N. Y.

Business Established 1832

The Lawrence Cement Co.

No. 302 Broadway New York, N. Y.

Selling Agents for

Dragon PORTLAND CEMENT

In Successful Use a Third-Century

HENDRICK SCREENS

for every purpose

ELEVATOR BUCKETS (plain and perforated) STACKS AND TANKS
GENERAL SHEET AND LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL PLATE CONSTRUCTION

HENDRICK MFG. CO. CARBONDALE, PENNA.

New York Office, 30 Church St. Pittsburgh Office, 544 Union Arcade Bldg.
Hazleton, Penna., Office, 705 Markle Bank Bldg.

CEMENT-GUN Trade Mark

And the Traylor Portable Compressor

See our full page ad in the last issue and in the next issue.

Cement-Gun Co., Inc., Allentown, Pa.

ROBERTSON PROCESS
ASBESTOS PROTECTED METAL

A Rust and Corrosion-Proof Building Material for Permanent Roofs, Siding and Trim

Write for Sample

H. H. Robertson Co., Pittsburgh, Pa.

TRUSCON Agatex HARDENER

BOOKLET ON REQUEST

Shipped as dry Crystals, for making Concrete Floors Hard as Iron

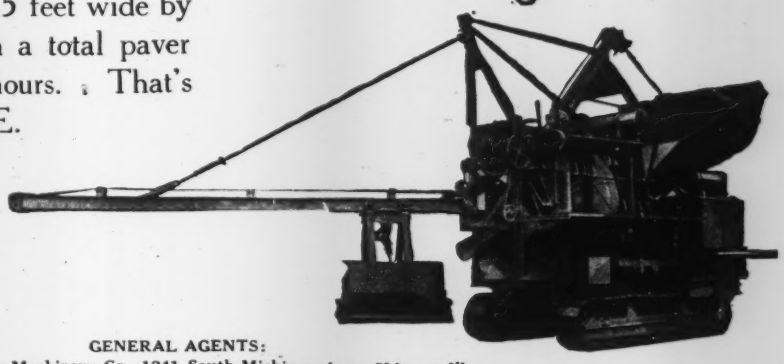
THE TRUSCON LABORATORIES — DETROIT

ROAD MULTI FOOTE PAVER
TRADE-MARK REGISTERED

STEADY FOOTAGE

Last year, in 758 working days, 10 MultiFoote pavers laid 390,309 lineal feet of concrete road, 17.5 feet wide by 6 x 7 inches thick, with a total paver delay of only 5.7 hours. That's STEADY FOOTAGE.

EVERY FOOTE A MIXER



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Edward R. Bacon Co., 51 Minna St., San Francisco, Cal. E. J. McHarg & Co., 3 Crandall St., Binghamton, N. Y.
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STEERS BY POWER TURNS IN ITS OWN LENGTH

CEMENT GUNS
Bought—Sold—Rented
GET OUR PRICES AND ESTIMATES BEFORE BUYING.
Cement Gun Construction Co.
537 So. Dearborn St. CHICAGO, ILL. *Oliver Building PITTSBURGH, PA.*

TECHNICAL PAINTS
for every purpose. Bridge Paints and Metal Preservative Paints of all kinds. Fume Resisting, Acid Resisting, Heat Resisting, Mill White, Concrete Paints, etc.
CHEESMAN-ELLIOT CO., INC., *Paint Makers*
Established 1876
23 Flatbush Ave., Brooklyn, N. Y.
Works: Williamsport, Pa., and Brooklyn.

ANTI-HYDRO FOR PERMANENT CONCRETE HARDENS WATERPROOFS
FOR HARDENING & WATERPROOFING CONCRETE
A liquid integral hardener makes concrete dustless and waterproof. Used successfully for eighteen years. Write for details.
ANTI-HYDRO WATERPROOFING COMPANY, Newark, N. J.

CEMENTILE ROOFS
The FIRST COST is the LAST
AMERICAN CEMENT TILE MANUFACTURING CO.
OLIVER BUILDING
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Pyramid Brand
Pennsylvania Slate

CENTURIES OF SERVICE
PYRAMID NATURAL SLATE STRUCTURAL
Proof against Time - Wear - Water - Fire!

for all Industrial purposes

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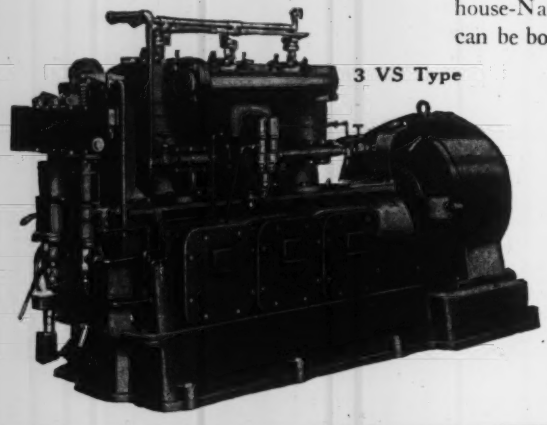
Toilet Enclosures, Stairs, Urinals, Shower Stalls, Laundry Tubs, Sinks and Sink Tops, Switchboards, Fuse Blocks, Bus Bar Supports and Panel Boards.

The Structural Slate Co.
Pen Argyl, Penna.

WESTINGHOUSE-NATIONAL AIR COMPRESSORS

Bearings Can't Run Dry



3 VS Type

ALL Westinghouse-National compressors equipped with the distinctive "HP" control are "fool-proof" in the matter of lubrication. Bearings *can't* run dry. When the oil in the crank case drops below a certain level the automatic control prevents further operation of the compressor until the oil supply is replenished.

This is only one of many features which combine to make Westinghouse-National compressors the most economical and serviceable that can be bought.

Westinghouse-National Air Compressors are furnished in all sizes from 11 to 550 cu. ft. piston displacement; stationary and portable types; A.C. or D.C. motor. Especially adapted for factories, foundries, garages, office buildings, railway shops and yards, printing plants, etc. Literature on request.

Westinghouse Traction Brake Company

General Offices and Works: Wilmerding, Pa.

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Boston, Mass.	Los Angeles	New York
Chicago, Ill.	Mexico City	Pittsburgh
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Houston, Tex.		San Francisco

"WAY DOWN UPON THE SUWANEE RIVER!"—

You know the old tune—

here are some new words!

Here you see a McKiernan-Terry No. 7 driving 25-ft. Concrete Piles for the EDSCOTT Memorial Bridge over the old "Suwanee Ribber," White Springs, Fla.

Listen to the story:

A jet was used before driving and carried down to about 20 feet. The piles were driven to an average depth of about 23 feet, and to a required safe load of 30 tons. In fact practically three-fourths of the 98-25 foot piles in this bridge were driven to ultimate refusal. A cushion built up of three 2-inch planks was used.

These piles were 17 in. square at butt, tapering to 10 in. square at the point. Not one was shattered in the driving!

Well, sah, "all de world am sad and weary" messing around with second rate pile hammers, until a McKiernan-Terry gets on the job. Why? Send for Bulletin 28 and see details!

McKiernan-Terry Drill Company

Rock Drills Pile Hammers Lifting Jacks
Mining and Quarrying Machinery

13 Park Row, New York

Works at Dover, N. J.

Agencies in the following Cities: Boston, Chicago, Pittsburgh, Cleveland, Detroit, St. Paul, San Francisco, Columbus, O., New Orleans, Philadelphia, Portland, Oregon. *Foreign Representatives:* British Steel Piling Co., London, England.

Parsons, Klapp, Brinckerhoff & Douglas

84 Pine St., New York — Hanna Bldg., Cleveland

WM. BARCLAY PARSONS, EUGENE KLAPP — HENRY M. BRINCKERHOFF, WALTER J. DOUGLAS

Engineers—Constructors—Managers

Design, Estimates, Supervision, Operation and Management, Examination and Reports

The Underpinning & Foundation Co. 342 Madison Ave. New York City

Difficult Foundations

Pneumatic, Steel, Concrete and Wooden Pile Foundations. Bridge Piers; Underpinning Heavy Buildings

"HERCULES" STEEL PILES

VULCAN IRON WORKS

THE WARRINGTON (VULCAN)

STEAM PILE HAMMERS

PILE DRIVERS AND PILE DRIVING MACHINERY

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New England Foundation Co., Inc.

120 Tremont Street, Boston, Mass.

SIMPLEX CONCRETE PILING

Open Caissons—Difficult Foundations

Engineering and Construction

For Trenching in Rock—

You can cut your time, labor and overhead expense by using

SULLIVAN ROTATORS

Operated by a

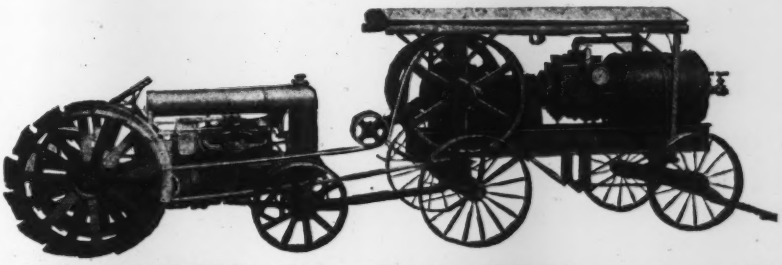
Sullivan Portable Air Compressor

Rotators weigh 38 lb., drill easily to 14 ft., and are easy on the runner.

The "WK-34" tractor-driven compressor on wheels, shown here at work on a sewer job at Breckenridge, Texas (Mackenzie Constr. Co.) is one of several Sullivan Portable types.

Ask for Bulletin 477-D

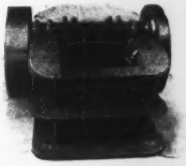
14TH NATIONAL GOOD ROADS SHOW
UNDER THE AUSPICES
A·R·B·A·
COLISEUM CHICAGO ILL
JAN 15 19 1923
VISIT OUR EXHIBIT



At right: Sullivan "WK-34" Portable Compressor, belted to a tractor

SULLIVAN MACHINERY CO., 124 So. Michigan Ave., Chicago, Ill.

Buchanan All-Steel Crushers



Simple—Strong—Durable

C. G. BUCHANAN COMPANY
Incorporated
92 West St., New York City

MILBURN
CARBIDE LIGHTS
FOR CONSTRUCTION WORK

Burn carbide, obtainable everywhere.

Write for Catalog No. 21

The Alexander Milburn Co.
1420-1428 W. Baltimore St., Baltimore, Md.
STOCKS IN ALL LARGE CITIES.

CORE BORINGS

For Testing Foundations and Tunnel Lines

ACKER DRILLING CO.
Contractors
CONNELL BLDG., SCRANTON, PA.

PENNSYLVANIA
PORTLAND CEMENT

Highest Quality

Manufactured by

Pennsylvania Cement Co.

New York Boston Philadelphia Buffalo

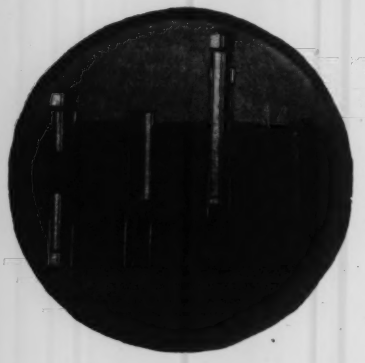
THE UNION LINE

Consists of pile driving, excavating machinery, road builders, and contractors' equipment.
See larger advertisement second issue of each month.

Union Iron Works
Lackawanna Siding, Hoboken, New Jersey

"The Pile With a BIG Foot"
MacARTHUR PEDESTAL PILE

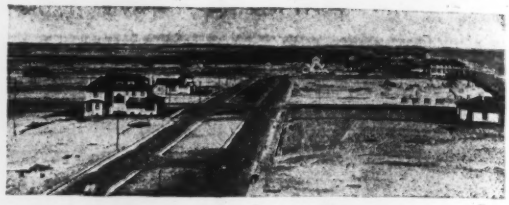
Four operations do it — driving the shell and core into the ground, withdrawing the core and half filling the shell with concrete, partly withdrawing the shell and tamping the concrete, filling in the remainder of the concrete, tamping that and wholly withdrawing the shell.



We have gotten out a mighty interesting little book — "MacArthur Facts" — which you will be glad to read. Ask us for a copy.

MacARTHUR CONCRETE PILE & FOUNDATION COMPANY, Inc.
12 John Street, New York City
Chicago Pittsburgh Cleveland, Ohio Montreal, Que.
Canadian MacArthur Concrete Pile Co., No. 10 Cathcart Street, Montreal, P. Q.

Dredging



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River and Harbor Improvements, Deep Waterways and Ship Channels

We are equipped to execute all kinds of dredging, reclamation and port works anywhere in the United States.

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Correspondence Invited from Southern Officials and Corporate and Private Interests Everywhere.

Largest Plant Longest Experience

Atlantic, Gulf and Pacific Co.
New York: 21 Park Row
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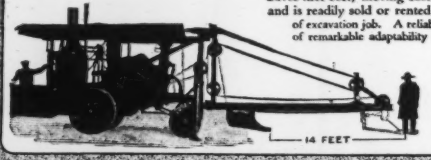
Small in Size, but a Big Money-Maker if you need a machine to move 100 to 300 cu. yd. per day.
Here is just the type of power drag scraper outfit—compact, inexpensive, easily moved from place to place—that owners of small gravel pits, have been looking for. Write for folder.

SAUERMAN BROS.
53 W. Jackson Blvd., Chicago

SAUERMAN Portable Power Scraper delivering gravel by a small conveying plant

TRADE MARK **KEYSTONE** REGISTERED U. S. PATENT OFFICE

The KEYSTONE is a highly versatile traction steam shovel with all the efficiency of specialized design, usable with three different interchangeable scoops —*Skimmer, Ditcher and Clamshell*— for Road Grading, Trenching, Back Filling, Cellar Digging, Pit Mining, Loading, Unloading and Handling Materials. Can be equipped with electric motor drive for use in buildings. Saves first cost, moving cost and upkeep, and is readily sold or rented for any sort of excavation job. A reliable road shovel of remarkable adaptability to other uses.



Model 4
14 ton
All Steel
Excavator
with ½ yd.
Skimmer

Keystone Driller Company, Beaver Falls, Pa.
170 Broadway, New York Monadnock Block, Chicago Joplin, Mo.

AMBURSEN DAMS
Best For Any Foundation
High Safety Factor Low First Cost
Rapid Construction No Maintenance
Send for Cost Data, Literature, Photos.
Ambursen Construction Co., Inc.
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Trench Machines, Trench Braces, Buckets
POTTER MFG. CO.
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Spencer, White & Prentis
100 West 41st St., N. Y. C.
Foundation Specialists
Steel Tubes to Rock *"Pretest" System*

Monighan
Walking Drag-Line Excavator

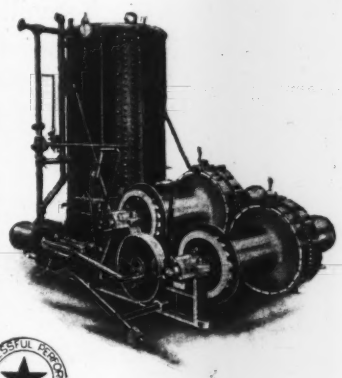
Monighan Machine Co.
2020 Carroll Ave., Chicago

TRADE MARK
MUNDY
ESTABLISHED 1869

HOISTING ENGINE for DERRICK WORK

in connection with

MUNDY SWINGING ENGINES



OUR improved engine with double friction drums, as shown here, is constructed for quarry work and is customary equipment for derrick work with separate swinger.

When used in quarries for operating a boom derrick, one drum is used for lifting the stone, the other for raising and lowering the boom.

Write for Steam Hoist Bulletin Fully Describing This Hoist

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New York Sales and Export Office: 30 Church St. **NEWARK, NEW JERSEY, U. S. A.**

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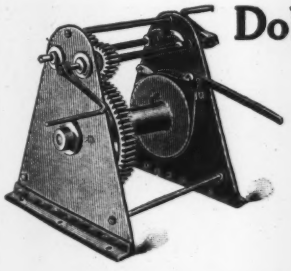

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Stocks of Fittings, Blocks, Sheaves, Winches, etc., carried by our agents—

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DOBBIE Foundry & Machine Co.

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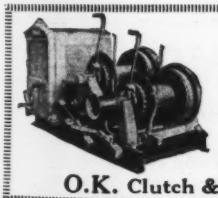

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with Multiple Cylinder Gasoline Engine

Four cylinder, 15-hp. gasoline engine similar to a motor truck, adapted to heavier demands of hoisting. Hoist is considerably lighter, takes up less space, can be moved readily. Repairs in any automobile garage. In 8, 12 and 15 hp., hoisting speeds from 125 to 150 ft. per minute; lift 1500, 2200 and 2800 lb. respectively.* Write us. *We also can furnish HOISTS, electric motor equipped.

O.K. Clutch & Machinery Co., Columbia, Pa.

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The satisfaction of possession and the pride of performance distinguish the owner of a Clyde Electric Hoist.

Continuous Service and the low Operating Cost are guarantees for better profits.

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DULUTH, MINN., U. S. A.
Sole Distributors for Clyde Iron Works

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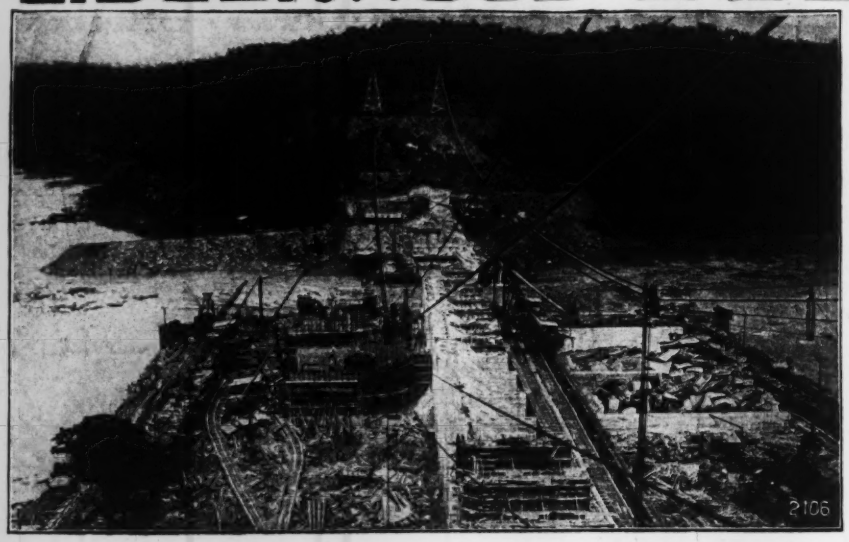
LIDGERWOOD CABLEWAYS



Steam—Electric
Stationary—Radial
Traveling

Illustration shows five Lidgerwood Cableways used by the Dixie Construction Co., building hydro-electric dam at Verbena, Ala., for the Alabama Power Co. Cableways have proven themselves invaluable on this class of work.

They handle plain or automatic dumping skips, grab buckets, concrete tubs, forms, and move derricks, hoists and other construction machinery.

HOISTS
DERRICKS

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Proportioned for Fast Work

Every detail of the Stroudsburg Engine is designed to take full advantage of the 125 pounds boiler pressure.

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Hoisting Engines

Ask any Stroudsburg user what kind of service he gets—from the engine and the works.

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PARSONS
TRENCH EXCAVATORS—BACKFILLERS
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NATIONAL
Steam—Electric—Gasoline
HOISTS—DERRICKS
also PILE HAMMERS
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National Hoisting Engine Co.
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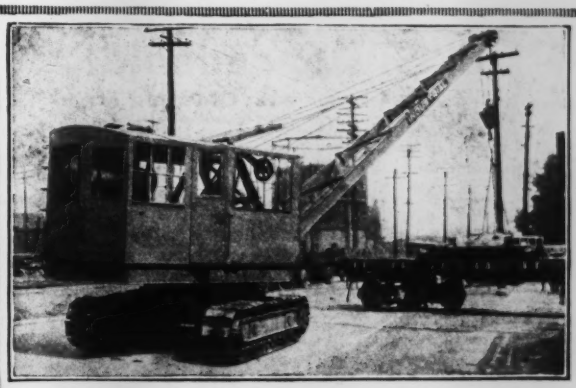

The Type BC "Industrial" Crawling Tractor Crane is pre-eminently adapted to the needs of road contractors; coal dealers, gravel, sand and stone producers and moderate size manufacturing plants.

It can be equipped to handle a hook and block, grab bucket, drag scraper bucket, wood grapple, electric lifting magnet, shovel dipper and pile driver leads with drop hammer.

Strict adherence to all considerations of quality, including well-developed designs, results in products that are unexcelled.

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A Proven Crane With A New Mounting

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250 Sycamore St., Ravenna, Ohio
Builders of Full Circle Cranes, "Auto-Cranes," Buckets, Hoists, etc.

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HERCULES WIRE ROPE
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Hercules (Red Strand) Wire Rope is wear resisting at every point. Its unusual combination of strength, toughness and elasticity make it economical as well as dependable.

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Get our quotations.

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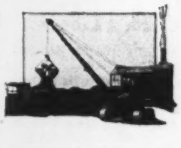

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A lightweight, flexible speed crane that represents the greatest advance made in crane construction in the past 20 years.

Has a single universal clutch that swings the crane, propels the machine, raises and lowers the boom.

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Walking, Track Crawler and Floating Type

BAY CITY DREDGE WORKS
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A complete line proved in service.
Patented crawler base provides unequalled mobility.
Cranes—with clamshell bucket or grappling hooks.
Draglines—for drainage jobs, excavating, grading.
Shovels—with only one motor—gas or electric.

The Northwest Crane; "goes anywhere a crane can go, does anything a crane can do."

NORTHWEST ENGINEERING CO.
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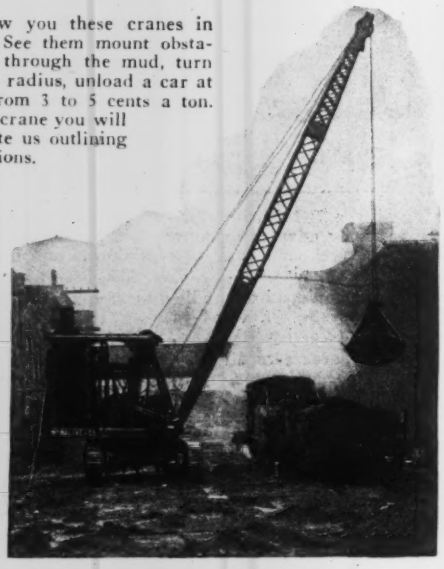
NORTHWEST CRANE DRAGLINE SHOVEL

O. S. Dependable

7 and 12-ton Cranes with Crawling Tread

Possess almost unlimited mobility. Their radius of operation and variety of uses make them economical in almost any field where materials are handled in any quantity.

Let us show you these cranes in operation. See them mount obstacles, travel through the mud, turn in a 15-foot radius, unload a car at a cost of from 3 to 5 cents a ton. This is the crane you will want. Write us outlining your conditions.



Compare O. S. Cranes in design, workmanship, material, speed, capacity, service, with any other cranes on the market.

O. S. Always Dependable.

ORTON & STEINBRENNER CO.
Offices: Chicago, Ill.
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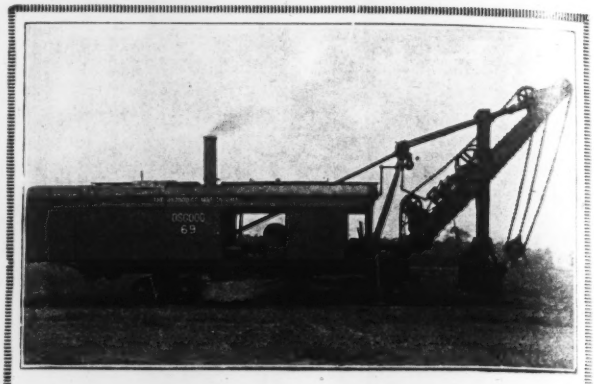

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Built in a wide range of sizes from ¾ to 6 cu. yds. on continuous tread, traction and railroad trucks, each embracing the same high standard of efficiency in speed of operation and low upkeep.

¾ and 1 cu. yd. capacities are of Revolving type and readily convertible to crane, clam shell or dragline.

The Steam Shovel worth investigating

THE OSGOOD COMPANY
Marion, Ohio, U. S. A.

LOCOMOTIVE CRANES
CLAM SHELL BUCKETS · SHIPBUILDING CRANES
CAR DUMPERS · PILE DRIVERS
THE McMYLER INTERSTATE CO.
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CRANES All Types All Sizes

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The "Baby Steam Shovel"

Duplicates every motion of the larger types.

Revolves in 7 feet

It will solve your hand excavation problem.

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Someone has said that "A polished shovel is a black shovel spoiled." The whys and wherefores of this statement and full information regarding the advantages of PITTSBURGH SHOVELS for all kinds of digging will be found in a new folder which may be secured without charge from Mr. C. B. Steffey, Pittsburgh Shovel Company, Pittsburgh, Penna.

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save fuel and increase capacity on Steam Shovels and Small Locomotives.
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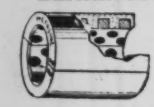

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require no oil for lubrication.
Best for hoisting purposes.
Catalog on request.

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Save Time, Labor and Space

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The WILLIAMS "Favorite" like all WILLIAMS Buckets, has the large one-piece hinge-bearing which holds the scoops in line —*permanently*

This WILLIAMS Bucket is still doing good work

More than 12 years ago the St. Helens Quarry Co., Portland, Ore., purchased a 2-yd. WILLIAMS "Favorite." Today they write:

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"We have had occasion to use other makes of bucket, but our **most satisfactory experience has been with the WILLIAMS."**

25 years of bucket building experience have shown us how to build buckets that we know are right. That's why we can **Guarantee All Parts Against Breakage.**

Write for the WILLIAMS Catalog. It shows pictures of WILLIAMS Buckets in rock handling and gravel dredging—work that you never thought any clamshell could do. It gives blue-prints and recommendations for use of every bucket in the complete WILLIAMS line. Ask for Catalog N.

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WILLIAMS

QUICK-ACTING CLAMSHELLS

All Parts Guaranteed Against Breakage

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for digging, dredging and handling - send for descriptive bulletin

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Mixers, Batch Boxes, Cars, Trucks, Locomotives

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Steel Towers, Chuting Plant, Heavy Duty and Small Mixers, Cars, Trucks, Hoppers, Carts

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Clamshell and Orange-peel Buckets

Dredging Buckets. Hydraulic Dredging Equipment. Complete Dredges. All work designed and finished in our own plant. Backed by 50 years' experience. Repairs to all types of Buckets and Dredges.

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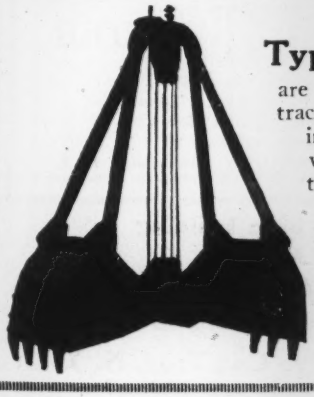

OWEN
Type "J" Buckets

are designed for the Contractor. Simple and rugged in construction, less wearing parts, guaranteed against breakage, and a powerful digger. *Ask for Type "J" Pamphlet.*

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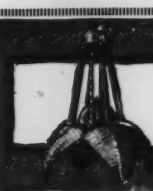

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Orange Peel, Clam Shell, Electric Motor, and Drag Scraper Buckets for all excavating, dredging, and rehandling purposes. Ask for Catalog 43, or consult our engineers gratis.

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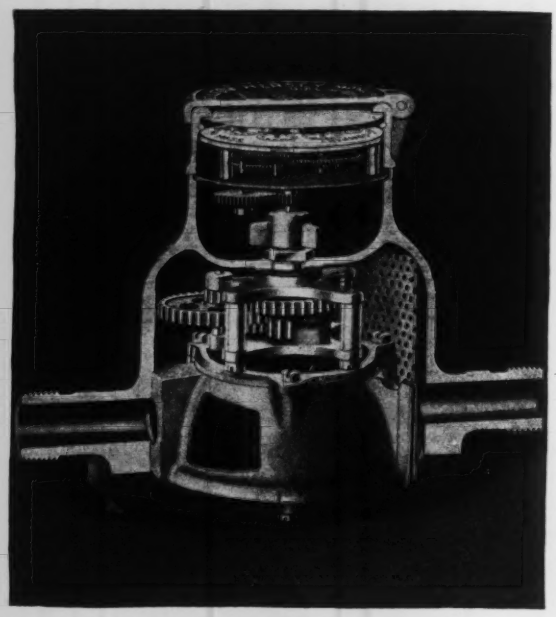
JOHN A. ROEBLING'S SONS CO., TRENTON, N. J.



HERSEY DISC METER, MODEL HF which is the Highest type of Frost protected Meter and HERSEY DISC METER, MODEL HD which is the Highest type of Divided or split-case Meter, are the product of thirty-five years' experience and refinement in the manufacture of Water Meters. These Models excel all Meters of all makes in all those essentials which go toward making exceptionally desirable Meters.

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"WATCH DOG"

WATER METERS

Accurate
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GAMON METER COMPANY
Main Office and Works:
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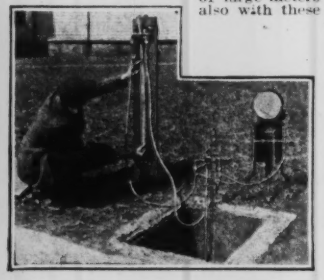
Measure and Locate Leaks and Waste
with SIMPLEX
Portable Pitot Tube Recorders

Such knowledge is indispensable for economical operation. The accuracy of large meters can be checked up also with these Recorders.



The Simplex is accurate and absolutely dependable down to a pipe velocity of 6 inches per second. Construction and operation fully explained in our literature.

Other Simplex Specialties: Hot and Cold Water Meters, Rate of Flow Controllers, Automatic Air Valves, Regulating Valves, Hydraulic Apparatus of Special Design.

SIMPLEX VALVE & METER CO.
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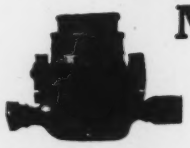
Simplex Specialties
for accurate Water Works Operation

WORTHINGTON

Meters



Meter frozen, showing compression of frost clamps

The upkeep cost of 35,000 Worthington Model "G" meters was four cents a year. Worthington frost clamps save money in winter, too. Ask for proof.

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Executive Offices: 115 Broadway, New York City
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THE VENTURI METER

"VENTURI" Registered Trade Mark
For Water, Sewage, Gas, Air, Steam—
in fact everything that flows.
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We have been building
LARGE
RENSSELAER VALVES
for Hydro-Electric Plants for 25 Years
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May your life run as smoothly
and endure as long as the
Trident Oil Enclosed Gear Train
Neptune Meter Company

If you're having hydrant troubles this winter— here is the way to avoid them forever after

LUDLOW HYDRANTS

1. This Hydrant will never clog—an automatic drain valve prevents it.
2. There is no delicate mechanism to wear out or break.
3. This Hydrant has rubber faced gate that wedges squarely against a bronze seat without rub, grind or wear.
4. This Hydrant operates without water hammer.
5. This Hydrant has "works" that come out easily, through the top, and requires no digging or use of wrenches.
6. This Hydrant will NOT flood if it is broken off.
7. This Hydrant is used in over 3,000 different places.

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Jenkins Bros

Choose your pump valves correctly

Use the guide below in your selection of pump valves.
No. 80. Hard Valve for hot water, pressures up to 250 pounds. Also suitable for pumping oils, acids, and other destructive fluids, and for use in air compressors.
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Should there be any doubt as to the kind of valve required, state service in which it is to be used, fluid handled pressure or head pump it is working against, *and in all cases give Diameter, Thickness, and size of holes.*

Know the genuine by the Jenkins Diamond Mark.

JENKINS BROS.
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Jenkins Valves
SINCE 1864

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ELECTRIC CONTROL UNIT
FOR THE MOTOR OPERATION OF LARGE
GATE AND GLOBE VALVES
WRITE FOR BULLETINS
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POWELL VALVES

THE WHITE STAR VALVE
The Wm. Powell Co., Cincinnati, O.

Clean Water Mains
Deliver Full Capacity

We are glad to confer with municipal officials or Water Companies.
National Methods are patented

National Water Main Cleaning Company, 54 Church Street New York

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This was largely due to the sterilization of drinking water — and W & T Chlorinators played an important role.

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Manufacturers of Chlorine Control Apparatus
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Write for Bulletins 19-2-3

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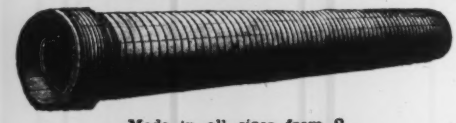

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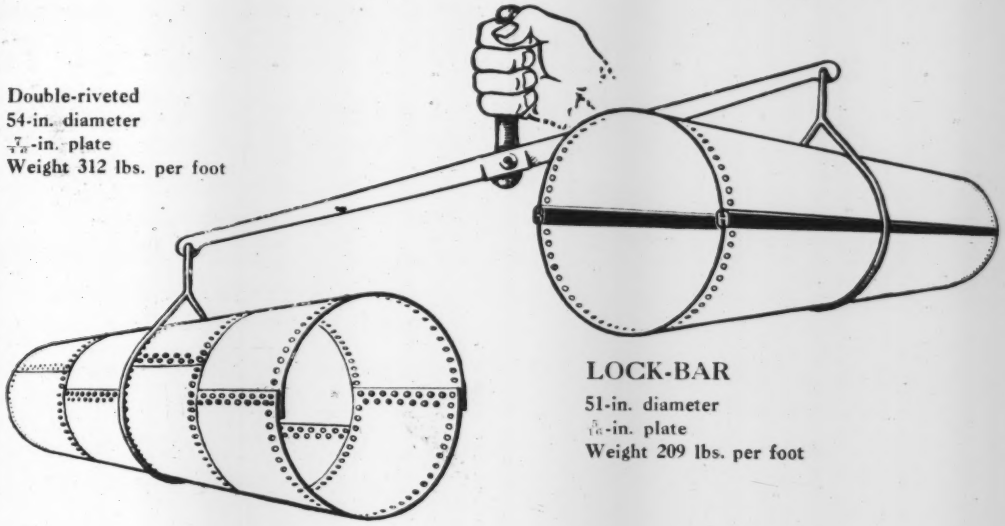

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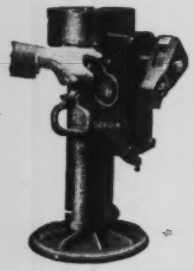

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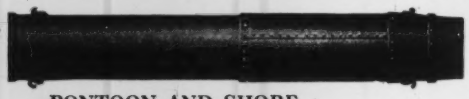

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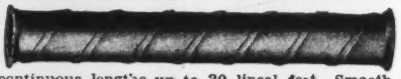

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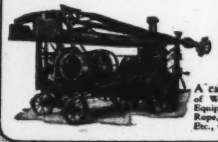

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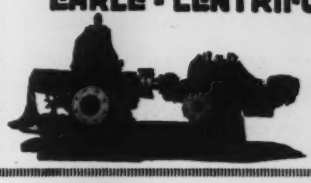

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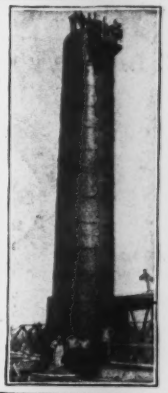

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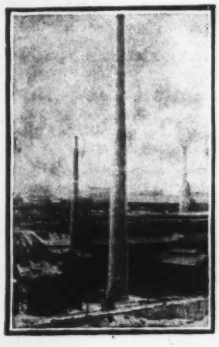

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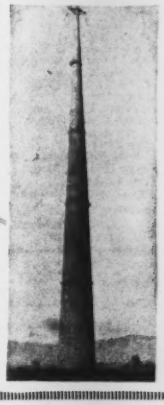

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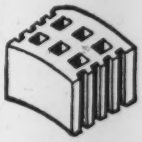

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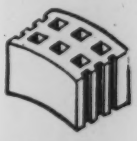

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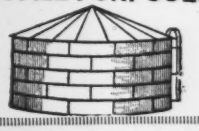

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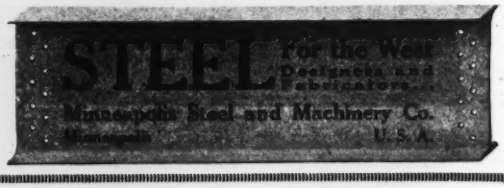

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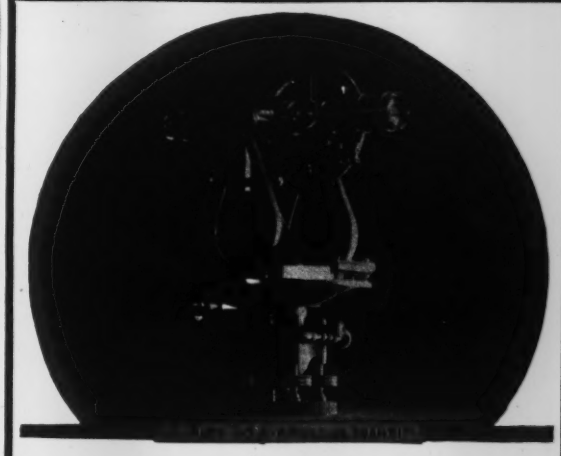

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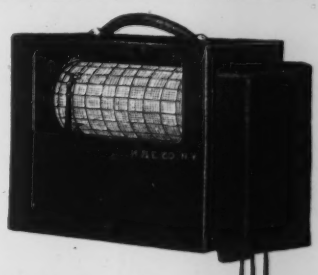

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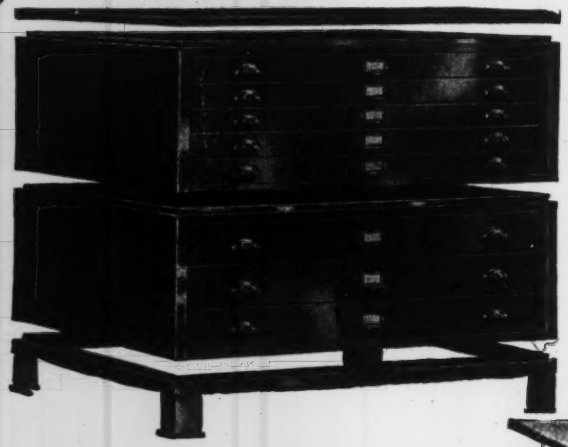

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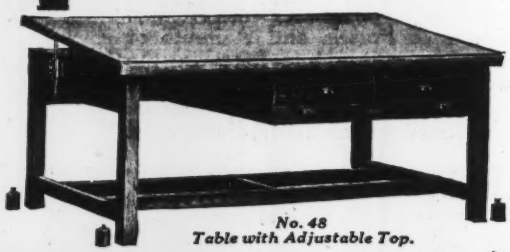

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Easton Car & Constr. Co.
Insley Mfg. Co.
Lakewood Engineering Co.
Ramapo Ajax Corp.
Western Wheeled Scraper Co.

Carts, Concrete
Insley Mfg. Co.
Ransome Concrete Mchy Co.
Sterling Wheelbarrow Co.

Castings, Iron and Steel
Amer. Cast Iron Pipe Co.
Bethlehem Steel Co.
Central Foundry Co.
Fox & Co., John
Jeffrey Mfg. Co.
Link-Belt Co.
McWane Cast Iron Pipe Co.
Marion Malleable Iron Wks.
Marion Steam Shovel Co.
U. S. Cast Iron Pipe & Foundry Co.
Vulcan Iron Works of Wilkes-Barre, Pa.
Warren Fdry. & Mach. Co.

Castings, Street and Sewer
Central Foundry Co.
U. S. Cast Iron Pipe & Fdry. Co.

Cement
Carney Cement Co.
Lawrence Cement Co.
Pennsylvania Cement Co.
Portland Cement Ass'n.
Vulcanite Port Cement Co.

Cement-Guns
Cement-Gun Co.

Cement-Making Machinery
Allis-Chalmers Mfg. Co.
Austin Machinery Corp.
Vulcan Iron Wks. of Wilkes-Barre
Willsea Works, The
Worthington Pump & Machy Corp.

Centers, Steel, Collapsible
Blaw-Knox Co.

Chain
Ryerson & Son, Joseph T.

Chain, Steel and Malleable Sprocket
Brown Hoisting Mchy. Co.
Haiss Mfg. Co., Geo.
Jeffrey Mfg. Co.
Link-Belt Co.
Webster Manufacturing Co.

Channelers
Sullivan Machinery Co.

Chimneys, Concrete
General Concrete Constr. Co.
Heine Chimney Co.
Rust Engineering Co.
Summerhays & Sons Co., Wm.
Weber Chimney Co.
Wiederholdt Construction Co.

Chimneys, Radial Brick
American Chimney Corp.
Custodis Chimney Construction Co., Alphons
Heine Chimney Co.
Heinicke, Inc., H. R.
Kellogg Co., M. W.
Rust Engineering Co.
Summerhays & Sons Co., Wm.
Wiederholdt Construction Co.

Chimneys, Steel
Blaw-Knox Co.
Chicago Bridge & Iron Wks.
Honhorst Co., The Jos.
Littleford Bros.

Chloride of Lime
Penna. Salt Mfg. Co.

Chlorinators
Wallace & Tiernan Co., Inc.

Chlorine, Liquid
Electro Bleaching Gas Co.
Wallace & Tiernan Co., Inc.

Chutes, Concrete
Insley Manufacturing Co.
Ransome Concrete Mchy Co.

Clutches, Friction
Caldwell Co., Inc., W. E.
Webster Manufacturing Co.

Coal and Ore-Conveying Machinery
Brown Hoisting Machy. Co.
Byers Machine Co.
Gifford Wood Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Lidgerwood Mfg. Co.
Link-Belt Co.
McMyler Interstate Co.
Portable Machy. Co.
Webster Manufacturing Co.

Coal-Storage Systems
Brown Hoisting Mchy. Co.
Haiss Mfg. Co., Geo.
Jeffrey Mfg. Co.
Lidgerwood Mfg. Co.
Link-Belt Co.

Cofferdams, Steel
Bethlehem Steel Co.

Column Clamps
Pyle-Rogers Corp.
Universal Form Clamp Co.

Column Forms
Blaw-Knox Co.
Heltzel Steel Form & Iron Co.

Compressors, Air, Heavy Duty
Allis-Chalmers Mfg. Co.
Chicago Pneumatic Tool Co.
DeLaval Steam Turbine Co.
Ingersoll-Rand Co.
McKiernan-Terry Drill Co.
Sullivan Machinery Co.
Westinghouse Traction Brake Co.
Worthington Pump & Machy. Corp.

Compressors, Air, Portable
Cement-Gun Co.
Chicago Pneumatic Tool Co.
General Electric Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.

Concrete, Chutes
Lakewood Engineering Co.

Concrete Floor Hardener
Anti-Hydro WaterProof'g Co
General Chemical Co.
Sonneborn Sons, Inc., L.
Truscon Laboratories

Concrete Making Machinery
Ransome Concrete Mchy Co.
Willsea Works, The

Concrete Reinforcement
American Steel & Wire Co.
Berger Mfg. Co.
Bethlehem Steel Co.
Brown Hoisting Machy. Co.
Consolidated Expanded Metal Cos.
Keystone Gypsum Fireproofing Co.
Laclede Steel Co.
Mitchell-Tappen Co.
National Steel Fabric Co.
Northwestern Expanded Metal Co.
Ryerson & Son, Joseph T.
Wickwire-Spencer Steel Corp.

Condensers
Ingersoll-Rand Co.
Manistee Iron Wks.
Worthington Pump & Machy. Corp.

Conveyors, Belt
Brown Hoisting Mchy. Co.
Gifford-Wood Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Link-Belt Co.
Portable Machy. Co.
Robins Conveying Belt Co.
Smith Engineering Works
Webster Manufacturing Co.

Conveyors, Bucket
Brown Hoisting Mchy. Co.
Gifford-Wood Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Link-Belt Co.
Webster Manufacturing Co.

Corner Bead Metal
Consolidated Expanded Metal Cos.

Cranes, Locomotive
Bay City Dredge Works
Brown Hoisting Machy. Co.
Browning Co.
Byers Mach. Co.
Clyde Iron Works Sales Co.
Erie Steam Shovel Co.
Industrial Works
Link-Belt Co.
McMyler Interstate Co.
Marion Steam Shovel Co.
Moore Bros.
Northwest Engineering Co.
Ohio Locomotive Crane Co.
Orton & Steinbrenner Co.
Osgood Co.
Thew Shovel Co.

Cranes, Traveling
Brown Hoisting Machy Co.
Chesapeake Iron Works
Cleveland Crane & Eng. Co.
Link-Belt Co.
Toledo Crane Co.

Cranes, Wrecking
Industrial Works

Creosoted Blocks, Timber, Poles, Cross-Arms Lumber, etc.
Amer. Creosoting Co. (Ky.)
Amer. Creosoting Co. (N.Y.)
Colonial Creosoting Co.
Eppinger & Russell Co.
Georgia Creosoting Co.
Jennison-Wright Co.
Southern Wood Preserv. Co.
Wyckoff Pipe & Creosoting Co.

Creosoting
Amer. Creosoting Co. (Ky.)
American Creosote Works
Colonial Creosoting Co.
Eppinger & Russell Co.
Eppinger & Russell Co.
Georgia Creosoting Co.
Jennison-Wright Co.
Wyckoff Pipe & Creosoting Co.

Creosoting Oils
Protexol Corp.

Crushers and Pulverizers
Acme Road Machy. Co.
Allis-Chalmers Mfg. Co.
Austin Mfg. Co.
Austin-Western Road Machy Co.
Brown Hoisting Mchy. Co.
Buchanan Co., Inc., C. G.
Jeffrey Mfg. Co.
Orton & Steinbrenner Co.
Smith Engineering Wks.
Universal Road Machy. Co.

Culverts, Corrugated
Austin-Western Road Mchy. Co.
Canton Culvert & Silo Co.
Newport Culvert Co.

Culverts, Metal
Amer. Sheet & Tin Plate Co.
Armco Culvert & Flume Mfrs. Assn.
Austin-Western Road Mchy. Co.
Newport Culvert Co., Inc.
U. S. Cast Iron Pipe & Foundry Co.

Culverts, Nestable & Riveted Corrugated
Canton Culvert & Silo Co.
Newport Culvert Co.

Cutting Blowpipes, Oxyacetlyne
Air Reduction Sales Co.
Milburn Co., Alexander

Dams
Ambursen Construction Co.

Derricks and Derrick Fittings
Byers Mach. Co.
Clyde Iron Wks Sales Co.
Dobbie Fdry & Machine Co.
Haiss Mfg. Co., Geo.
Hayward Co.
Insley Manufacturing Co
Lidgerwood Mfg. Co.
McMyler Interstate Co.
Mundy Hoist. Eng. Co., J. S.

Disinfecting Chemicals
Electro Bleaching Gas Co.
Wallace & Tiernan Co., Inc.

Distributors, Pressure Oil
(See Road Oilers, Pressure)

Ditching Machinery
(See Excavators)

Docks and Harbor Work
Parsons, Klapp, Brinkerhoff & Douglass
Snare Corp., Frederick

Drafting Machines
Universal Drafting Mach Co.

Drafting Room Furniture
Dietzgen Co., Eugene
Hamilton Manufacturing Co
Pease Co., C. F.

Draglines
Northwest Engineering Co.

Drawing Materials
Dietzgen Co., Eugene
Hamilton Manufacturing Co
Keuffel & Esser Co.
Weber Co., F.

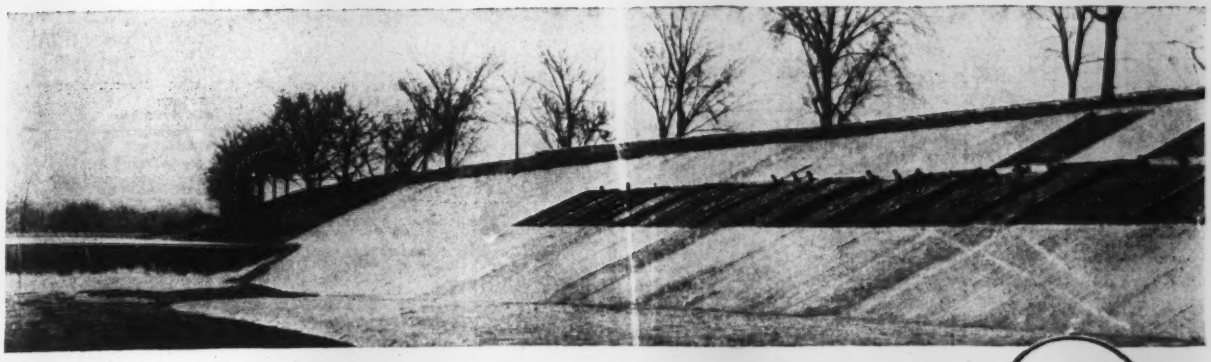
Drawing Tables
(See Tables and Boards, Drawing.)

Dredges
Bay City Dredge Works
Flory Manufacturing Co., S.
Hayward Co.
Lidgerwood Mfg. Co.
Marion Steam Shovel Co.
Osgood Co.

Dredges, Dipper
Austin Machinery Corp.
Erie Steam Shovel Co.
Osgood Co.

Dredges, Hydraulic
Atlantic Gulf & Pacific Co
Marion Steam Shovel Co.
Morris Machine Co.

Drills, Core
Acker Drilling Co.
Ingersoll-Rand Co.
Keystone Driller Co.
McKiernan-Terry Drill Co.
Sullivan Machinery Co.



Full Protection to all kinds of Concrete Work

Elastic used in this riprap work by Miami Conservancy district near Dayton, Ohio.

ANY 100 yard stretch of concrete work will expand or contract approximately 2½ inches when the temperature changes 100 degrees.

This expansion or contraction is unavoidable and unfailing whether the change in temperature takes place in a few hours or a year's time.

Taking a factor of safety of four (4) enough expansion joints should be used to provide for expansion of 4x2½ inches or 10 inches, hence, there should be 20 half-inch expansion joints in every hundred yards.

Carey Elastite used on this basis has been employed in bridges, viaducts, dams, reservoirs, grand stands, and in every instance is successfully protecting the work against buckling and cracking.

It costs little to provide absolute safety from stresses due to inevitable changes in temperature.

Write for sample and full particulars to

The Philip Carey Company

18 Wayne Avenue, Lockland, Cincinnati, Ohio

Carey Elastite

NAME REG. U.S. Patent Office

EXPANSION JOINT

5-21

Drills, Rock
Chicago Pneumatic Tool Co.
General Electric Co.
Jeffrey Mfg. Co.
Ingersoll-Rand Co.
McKiernan-Terry Drill Co.
Sullivan Machinery Co.

Drums, Holding
Blaw-Knox Co.
Haiss Mfg. Co., Inc., Geo.
Hayward Co.
Monighan Machine Co.

Dryers
Blaw-Knox Co.

Dryers, Sand and Gravel
Vulcan Iron Works of Wilkes-Barre, Pa.

Elevators, Bucket
Austin Mfg. Co.
Austin-Western Road Mchy. Co.
Brown Hoisting Mchy. Co.
Gifford-Wood Co.
Haiss Mfg. Co., Inc., Geo.
Hendrick Mfg. Co.
Link-Belt Co.
Ohio Locomotive Crane Co.
Smith Engineering Wks.
Webster Manufacturing Co.

Elevators; Contractors' Material
Austin Mfg. Co.
Austin-Western Road Mchy. Co.
Byers Mach. Co.
Haiss Mfg. Co., Inc., Geo.
Insley Manufacturing Co.
Ransome Concrete Mchy Co.
Smith Co., T. L.
Smith Engineering Wks.

Elevators, Factory
Ridgway & Son Co., The
Craige

Engineers, Roofing
Federal Cement Tile Co.
Marks Corp., The H. E.

Engineers and Contractors
Atlantic Gulf & Pacific Co.
Cement-Gun Constr. Co.
Parsons, Klapp, Brinckerhoff & Douglass
Raymond Concrete Pile Co.
Spencer, White & Prentis
Terry & Tench Co., Inc.
(See Directory of Engineers)

Engineers' and Draftsmen's Instruments and Supplies
Dietzgen Co., Eugene
Hamilton Manufacturing Co.
Gurley, W. & L. E.
Keuffel & Esser Co.
Lufkin Rule Co.
Monroe Calculating Machine Co.
N. Y. Blue Print Paper Co.
Pease Co., C. F.
White Co., Inc., David
Wiebusch & Hilger, Ltd.

Engines, Gas, Gasoline & Oil
Allis-Chalmers Mfg. Co.
Chicago Pneumatic Tool Co.
Cushman Motor Works
Ingersoll-Rand Co.
National Hoisting Eng. Co.
Smith Co., T. L.
Wisconsin Motor Mfg. Co.
Worthington Pump & Machy Corp.

Engines, High Duty Waterworks
Morris Machine Co.

Engines, Hoisting
(See Hoists)

Engines, Portable
Cushman Motor Works

Engines, Steam
Chicago Pneumatic Tool Co.

Excavators, Cableway
Clyde Iron Wks Sales Co.
Lidgerwood Mfg. Co.
Mundy Hoist. Eng. Co., J. S.
Sauerman Bros.

Excavators, Ditch & Trench
Austin Machinery Corp.
Bay City Dredge Works
Erie Steam Shovel Co.
Keystone Driller Co.
Marion Steam Shovel Co.
Northwest Engineering Co.
Osgood Co.
Parsons Co.
Potter Mfg. Co., The
Thew Shovel Co.

Excavators, Dragline
Austin Machinery Corp.
Bay City Dredge Works
Byers Mach. Co.
Erie Steam Shovel Co.
Hayward Co.
Marion Steam Shovel Co.
Monighan Machine Co.
Northwest Engineering Co.
Osgood Co.
Sauerman Bros.
Smith Co., T. L.

Expanded Metal
Berger Mfg. Co.
Consolidated Expanded Metal Cos.
Northwestern Expanded Metal Co.

Expansion Bolts
National Lead Co.

Filters, Water, Municipal and Industrial
American Water Softener Co.
California Filter Co.
Graver Corporation
International Filter Co.
N. Y. Continental Jewell Filtration Co.
Roberts Filter Mfg. Co.
Simplex Valve & Meter Co.

Fire Clay
Dickey Clay Mfg. Co.

Fireproofing Material & Construction
Berger Mfg. Co.
Marks Corp., H. E.
Robertson Co., H. H.

Floor, Asphalt Mastic
Standard Oil Co. of Ind.
Standard Oil Co. of N. Y.
Texas Company

Floor Hardener, Concrete
(See Concrete Floor Hardener.)

Floor, Wood Block
Jennison-Wright Co.

Flooring, Fireproof
Kerlow Steel Flooring Co.
Irving Iron Works
Marks Corp., H. E.
Universal Safety Tread Co.

Flumes, Iron & Steel
Armco Culvert & Flume Mfrs. Assn.
Blaw-Knox Co.

Forgings
Bethlehem Steel Co.

Form Clamps
Insley Mfg. Co.
Pyle-Rogers Corp.
Universal Form Clamp Co.

Form Tighteners
Marion Malleable Iron Wks.

Forms, Culvert, Road, Sewer, Tunnel, etc.
Blaw-Knox Co.
Foote Concrete Machy. Co.
Heltzel Steel Form & Iron Co.
Metal Forms Corp.

Forms for Curb and Gutter
Blaw-Knox Co.
Metal Forms Corp.

Forms for Walls, Building Construction, etc.
Berger Mfg. Co.
Blaw-Knox Co.
Heltzel Steel Form & Ir. Co.
Metal Forms Corp.

Foundations
MacArthur Concrete Pile & Foundation Co.
New England Fd. Co., Inc.
Raymond Concrete Pile Co.
Spencer, White & Prentis.
Underpinning & Found. Co.

Frogs and Switches, Railway
Bethlehem Steel Co.
Easton Car & Constr. Co.
Ramapo Ajax Corp.

Garbage Disposal Apparatus
Jeffrey Mfg. Co.

Gas, Chlorine
Electro Bleaching Gas Co.

Gas Producers
Blaw-Knox Co.

Gates, Sluice
Coffin Valve Co.
Coldwell-Wilcox Co.
Crane Co.
Ludlow Valve Mfg. Co.

Gauges, Loss of Head
Simplex Valve & Meter Co.

Gauges, Rates of Flow
Simplex Valve & Meter Co.

Gears
Earle Gear & Mach. Co.

Generators, Electric
Allis-Chalmers Mfg. Co.
General Electric Co.

Glass, Fireproof
(See Wire Glass)

Governors, Waterwheel
Woodward Governor Co.
Worthington Pump & Machry. Corp.

Graders, Road
Austin Mfg. Co.
Austin-Western Rd. Mchy Co.
Erie Steam Shovel Co.
Koehring Co.
Smith Co., T. L.
Stroud & Co.
Western Wheeled Scraper Co.

Granite
Granite Paving Block Mfrs.' Assoc. of the U. S., Inc.

Gratings, Subway
Irving Iron Works
Kerlow Steel Flooring Co.
Mitchell-Tappen Co.
Universal Safety Tread Co.

Gravel Washing Plants
Link-Belt Co.
Sauerman Bros.

Gypsum
Keystone Gypsum Fireproofing Co.
Marks Corp., H. E.

Hammers, Pneumatic
Chicago Pneumatic Tool Co.
National Hoisting Eng. Co.

Hammers, Steam Pile
(See Pile Hammers, Steam)

Heaters, Concrete Water
Graver Corporation

Heaters Tar & Asphalt
Honborst Co., The Jos.
Littleford Bros.

Hoists, Concrete Tower
Insley Manufacturing Co.

Hoists, Contractors' Electric
Allis-Chalmers Mfg. Co.
Bay City Dredge Works
Byers Mach. Co.
Clyde Iron Wks. Sales Co.
Dobbie Foundry & Mach.Co.
Flory Mfg. Co., S.
Lidgerwood Mfg. Co.
Mundy Hoist. Eng. Co., J. S.
Monighan Machine Co.
National Hoisting Eng. Co.
O. K. Clutch & Machy. Co.
Ransome Concrete Mchy Co.
Stroudsburg Engine Works
Vulcan Iron Works of Wilkes-Barre, Pa.

Hoists, Contractors' Gasoline
Lidgerwood Mfg. Co.
Mundy Hoist. Eng. Co., J. S.
National Hoisting Eng. Co.
O. K. Clutch & Machy. Co.
Stroudsburg Engine Works

Hoists, Contractors' Steam
Allis-Chalmers Mfg. Co.
Byers Mach. Co.
Clyde Iron Wks. Sales Co.
Ingersoll-Rand Co.
Lidgerwood Mfg. Co.
Mundy Hoist. Eng. Co., J. S.
National Hoisting Eng. Co.
Stroudsburg Engine Works
Vulcan Iron Wks of Wilkes-Barre, Pa.

Hoists, Electric
Yale & Towne Mfg. Co.

Hoists, Hydraulic Head Gates
Dilts Machine Wks., Inc.

Hoists, Motor, Truck
Wood Hydraulic Hoist & Body Co.

Hoists, Pneumatic
Chicago Pneumatic Tool Co.
Ingersoll-Rand Co.
Stroudsburg Engine Works
Sullivan Machinery Co.

Hoppers, Concrete
Insley Manufacturing Co.
Ransome Concrete Mchy Co.

Hoppers, Steel
Heltzel Steel Form & Iron Co.
Honhorst Co., The Jos.

Hose, Air
Chicago Pneumatic Tool Co.

Hydrants
Ludlow Valve Mfg. Co.
Rensselaer Valve Co.
Smith Mfg. Co., A. P.
Wood & Co., R. D.

Incinerators
Power Specialty Co.

Inspecting Laboratories
(See Directory of Engineers)

Instruments, Drawing
Keuffel & Esser Co.
N. Y. Blue Print Paper Co.

Instruments, Surveying
Ainsworth & Sons, Wm.
Berger & Sons, C. L.
Buff & Buff Mfg. Co.
Gurley, W. & L. E.
Keuffel & Esser Co.
Lietz Co., A.
N. Y. Blue Print Paper Co.
White Co., Inc., David

Insulation, Misc.
Texas Company

Iron Work, Structural and Ornamental
Hendrick Mfg. Co.
Irving Iron Works
Kerlow Steel Flooring Co.
Ryerson & Son Co., Jos.
Snead Architectural Iron Works
Universal Safety Tread Co.

Jacks, Lifting
McKiernan-Terry Drill Co.
Norton, Inc., A. O.

Joints, Expansion Paving
Carey Co., The Philip
Servicised Products Co.
Truscon Steel Co.

Joints, Filler Paving
Servicised Products Co.
Standard Oil Co. of N. Y.

Joints, Flexible Pipe
Central Foundry Co.
Crane Co.
U. S. Cast Iron Pipe & Foundry Co.

Kilns, Rotary
Vulcan Iron Works of Wilkes-Barre, Pa.

Lamps, Arc, & Incandescent
General Electric Co.

Lamps, Flood
General Electric Co.

Lath, Expanded Metal
Armco Culvert & Flume Mfrs. Assn.
Berger Mfg. Co.
Mitchell-Tappen Co.
Northwest'n Exp. Metal Co.
Waring-Underwood Co.

Leadite
Leadite Co., Inc., The

Lights, Contractors'
Carbic Manufacturing Co.
Milburn Co., Alexander

Loaders, Wagon
(See Wagon Loaders)

Locomotives, Compressed Air
Baldwin Locomotive Co.
Porter Co., H. K.

Locomotives, Electric
Baldwin Locomotive Co.
General Electric Co.
Jeffrey Mfg. Co.

Locomotives, Fireless Steam
Porter Co., H. K.

Locomotives, Gasoline
Baldwin Locomotive Co.
Fate Root Heath Co.
Hadfield-Penfield Steel Co
Lakewood Engineering Co.
Milwaukee Loco. Mfg. Co.
Vulcan Iron Wks of Wilkes-Barre, Pa.
Whitcomb Co., Geo. D.

Locomotives, Steam
Baldwin Locomotive Co.
Davenport Locomotive Wks.
Porter Co., H. K.
Vulcan Iron Wks of Wilkes-Barre, Pa.

Locomotives, Storage Battery
General Electric Co.
Whitcomb Co., Geo. D.

Lubricants
Greene, Tweed & Co.
Texas Co.

Lumber
Exchange Sawmills Sales Co.
Lawson & MacMurray

Manhole Covers
Central Foundry Co.

Manometers
Simplex Valve & Meter Co

Meter Boxes
Pittsburgh Meter Co.

Meter Provers
Hersey Mfg. Co.
Pittsburgh Meter Co.

Meters, Boiler Feed Water
Builders Iron Foundry

Meters, Current
General Electric Co.
Gurley, W. & L. E.

Meters, Gas and Steam
Builders Iron Foundry
General Electric Co.
Wallace & Tiernan Co., Inc.

Meters, Venturi
Builders Iron Foundry

Meters, Water, Oil, etc.
Builders Iron Foundry
Gamon Meter Co.
General Electric Co.
Hersey Mfg. Co.
Neptune Meter Co.
Pittsburgh Meter Co.
Simplex Valve & Meter Co.
Worthington Pump & Machry Corp.

Mixers, Asphalt
(See Mixers, Hot)

Mixers, Concrete
Austin Machinery Corp.
Cement-Gun Co.
Foote Concrete Machy. Co.
Koehring Co.
Lakewood Engineering Co.
Ransome Concrete Mchy Co.
Smith Co., T. L.

Mixers, Grout
Austin Machinery Corp.
Ransome Concrete Mchy Co
Union Iron Works

Mixers, Hot
Austin Machinery Corp.
Koehring Co.

Mixers, Mortar
Austin Machinery Corp.
Ransome Concrete Mchy Co.

Mixers, Paving
Austin Machinery Corp.
Foote Concrete Machy. Co.
Koehring Co.
Lakewood Engineering Co.
Ransome Concrete Mchy Co.
Smith Co., T. L.

Mixers, Pneumatic
Ransome Concrete Mchy Co.

Mortar
Carney Cement Co.

Motors, Electric
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Traction Brake Co.

Motors, Gasoline
Wisconsin Motor Mfg. Co

Motor-Truck Bodies
Wood Hydraulic Hoist and Body Co.

Motor Trucks
(See Trucks, Motor)

Nitrogen
Air Reduction Sales Co.

Oil Lubricating
Texas Co

Oxy-Acetylene Process
Air Reduction Sales Co
Blaw-Knox Co.
Oxweld Acetylene Co.

Oxygen
Air Reduction Sales Co.

Packing, Water Pipe
Greene, Tweed & Co.
Jenkins Bros.

Paints, Graphite
Truscon Laboratories

Paints, Light Reflecting
Cheesman & Elliot Co.
Truscon Laboratories

Paints, Metal Protective
Carey Co., The Philip
Cheesman & Elliot Co.
National Lead Co.
Protexol Corp.
Servicised Products Co.
Truscon Laboratories

Partitions
Keystone Gypsum Fireproofing Co.

Paving, Asphalt
Carey Co., Philip
Standard Oil Co of Ind.
Standard Oil Co. of N. Y.
Texas Co.

Paving Blocks, Creosoted Wood
See Creosoted Block Timber, Poles, Cross-Arms, Lumber, etc.

Paving Blocks, Granite
Granite Paving Block Mfrs' Assoc. of the U. S., Inc

Paving Breakers
Ingersoll-Rand Co.

Paving, Cold Patching
Standard Oil Co. of Ind.
Standard Oil Co. of N. Y.
Texas Company

Paving Guards, Steel
International Steel Tie Co.

Paving Joint Filler
Servicised Products Co.
Texas Co.

Penstocks
Blaw-Knox Co.

Pile Drivers
Industrial Works
McKiernan-Terry Drill Co
McMyler Interstate Co.
Union Iron Works

Pile Hammers, Steam
Industrial Works
McKiernan-Terry Drill Co.
National Hoisting Eng. Co
Union Iron Works Chicago
Vulcan Iron Works of

Piles, Concrete
MacArthur Concrete Pile & Foundation Co.
New England Fd. Co. Inc
Raymond Concrete Pile Co

Piles, Creosoted Wood
Jennison-Wright Co.

Piling, Interlocking Steel
Bethlehem Steel Co.

Pipe Bends
East Jersey Pipe Co.

Pipe, Cast Iron
Amer. Cast Iron Pipe Co.
Central Foundry Co.
Fox & Co., John
Glamorgan Pipe & Fdry Co
McWane Cast Iron Pipe Co.
U. S. Cast Iron Pipe & Foundry Co.
Warren Fdry. & Mach. Co
Wood & Co., R. D.

Pipe Coils
Superheater Co.

Pipe, Concrete
Independent Conc. Pipe Co
Lock Joint Pipe Co.
Standard Concrete Pipe Co

Pipe, Corrugated
Austin-Western Road Mchy Co.
Canton Culvert & Silo Co.
Newport Culvert Co.

Pipe Covering, Asbestos
Carey Co., The Philip

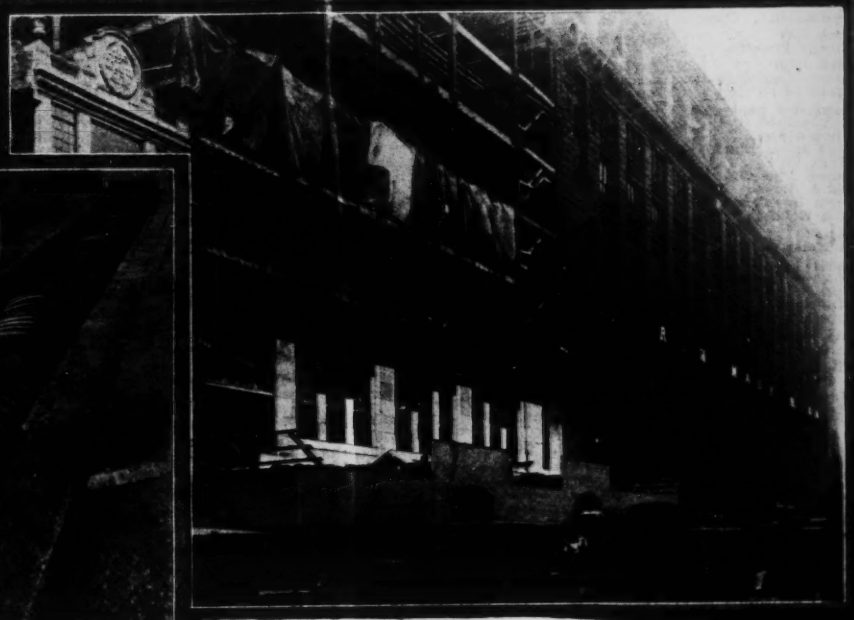
Pipe Covering, Wood
Michigan Pipe Co.
Standard Wood Pipe Co.
Wyckoff & Son Co., A.

Pipe, Dredge
Machold & Riddell

Pipe Fittings
Builders Iron Foundry
Central Foundry Co.

IN THE R. H. MACY ADDITION

BERLOY



50,000 Square Feet
3/4-inch Ribplex Reinforcement

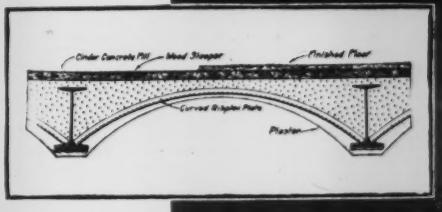
In the addition to the R. H. Macy Store in New York now being erected by Marc. Eidlitz & Son, Inc., Mooney Construction Co. handling the fireproofing, 24-gauge Berloy ¾-in. Ribplex, curved to specifications, is being placed between deep girders, as forms and reinforcement for the concrete.

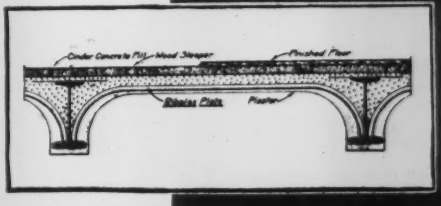
This means a big saving in concrete and dead load, without lessening the efficiency of the slab. The Architect, Robert D. Kohn, is well pleased with the results.

The use of this curved Ribplex concrete floor construction merits careful consideration by every architect, engineer, and contractor.

Ribplex is also used extensively in solid slab construction for roofs and floors.

Write our nearest office for Bulletin K-24 and sample of ¾-in. Riplex.





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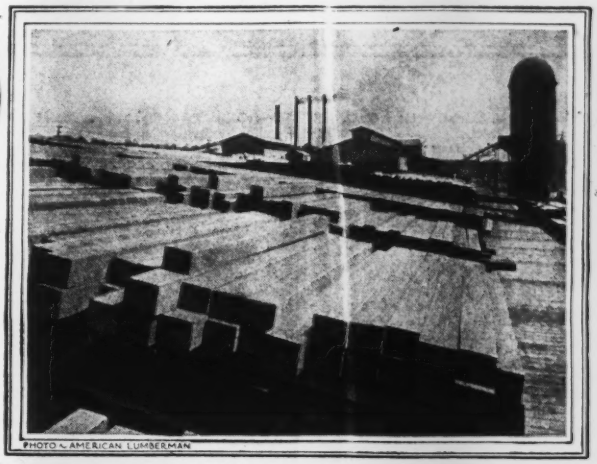

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Shearing / / grain.....	100.0	83.0	84.0	85.0
Shock-resisting ability	100.0	90.0	91.0	77.0
Stiffness	100.0	82.0	85.5	100.0
Hardness	100.0	85.5	80.0	78.0
Weight (green).....	100.0	100.0	108.0	80.0
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Summary of results, Testing Laboratories, Department of Civil Engineering, Columbia University.

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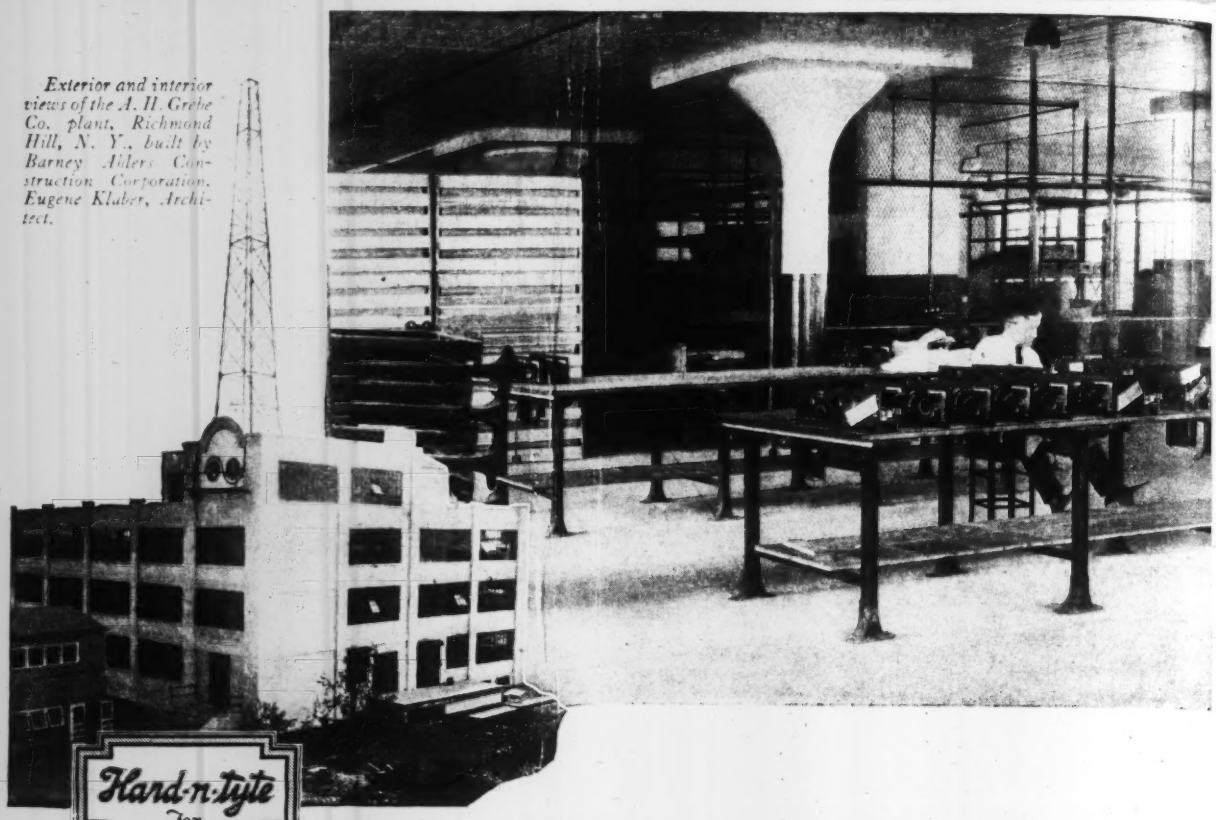

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